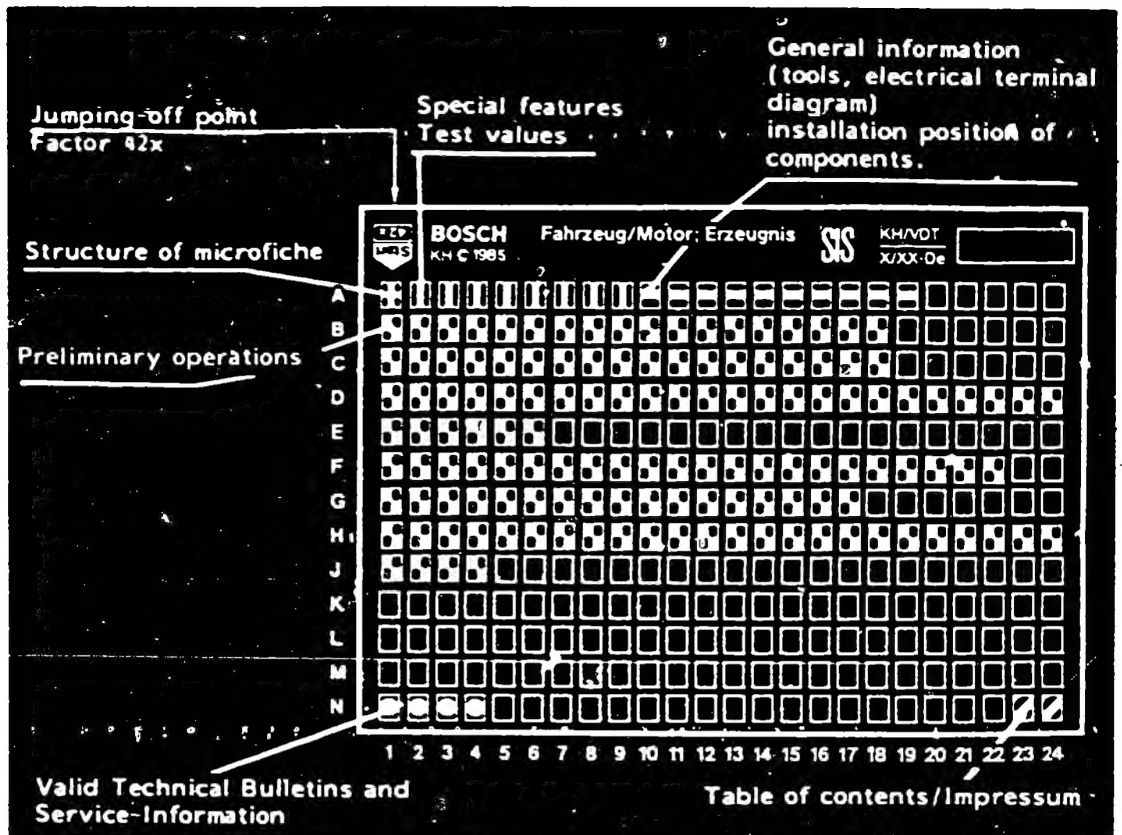


## Structure of microfiche



1. Read from left to right
2. Title of microfiche (appears on each coordinate)

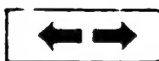
<b>E16</b>	Product/component/test step
	Vehicle/engine

← Coordinate

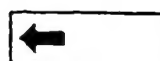
3. Limits of section



Beginning



Mid-section



End



One-page section

4. Purely vehicle-specific passages in the text are marked with a vertical bar.

5. Reference to relevant working steps in the test specifications, e.g. coordinate C6.

**C6**

**A1**



## 2.2 Test specifications - RQV governors

Coupling pin longitudinal  
play:

0.5...1.0 mm

**H10**

Presetting dimension  
between flyweight  
threaded pin and round  
nut:

1.0 mm

**G9**

Gap from (cam plate) to  
sealing surface of  
governor cover (measure  
with seal):

24.4...24.6 mm

**G12**

Slider dimension:

34.9...35.1 mm

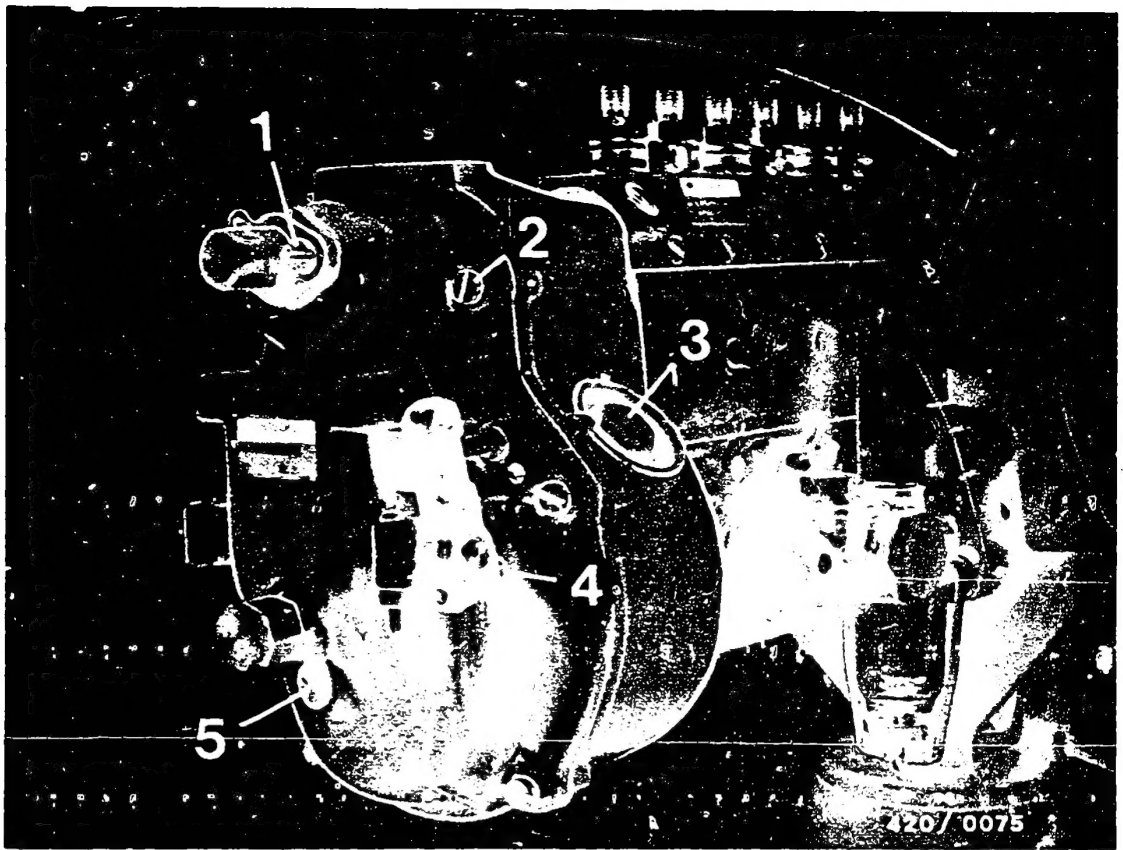
**H8**

**A3**

Test specifications

RQ/RQV governors

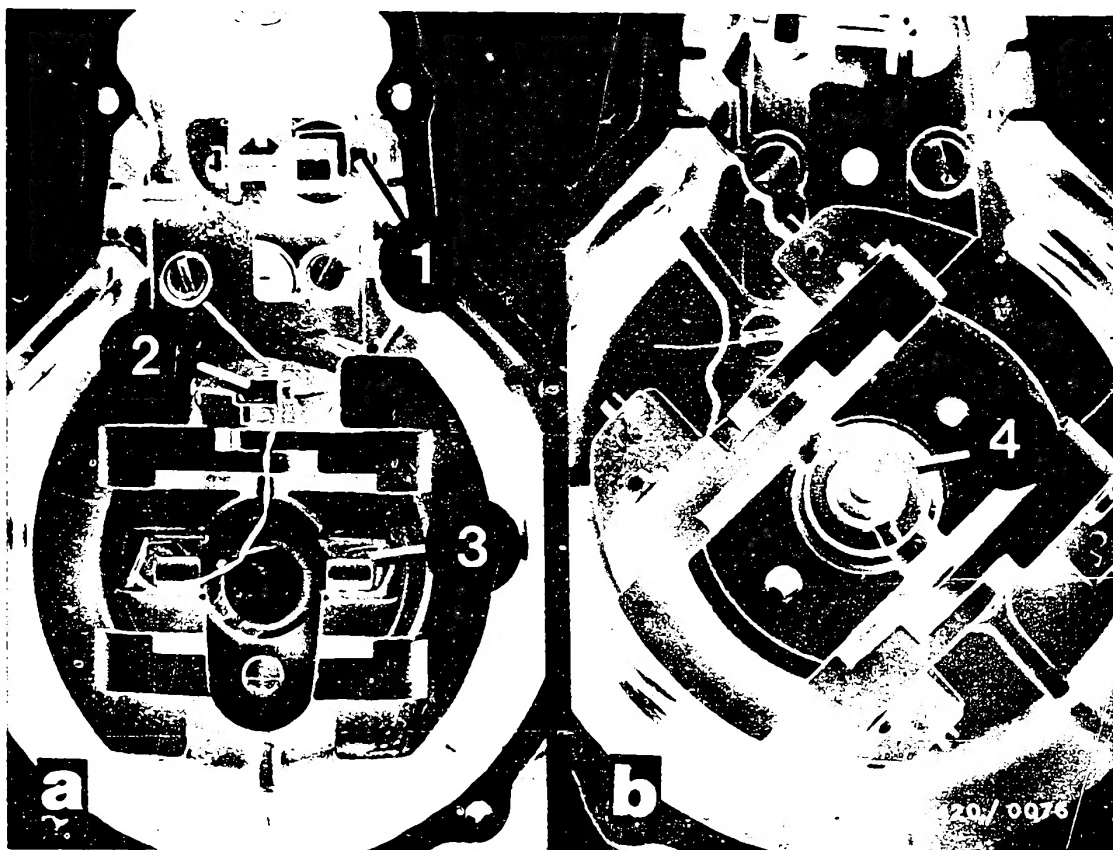




### 2.3 Tightening torques

1 = Fillister-head screw	4...6 Nm
Capstan screw	4...6 Nm
Break-off screw	2...3 Nm
2 = Flat-head screw	6...8 Nm
Fillister-head screw	7...9 Nm
3 = Screw plug	30...40 Nm
4 = Control-lever clamping screw	11...13 Nm
5 = Guide pin	20...25 Nm (with Loctite)





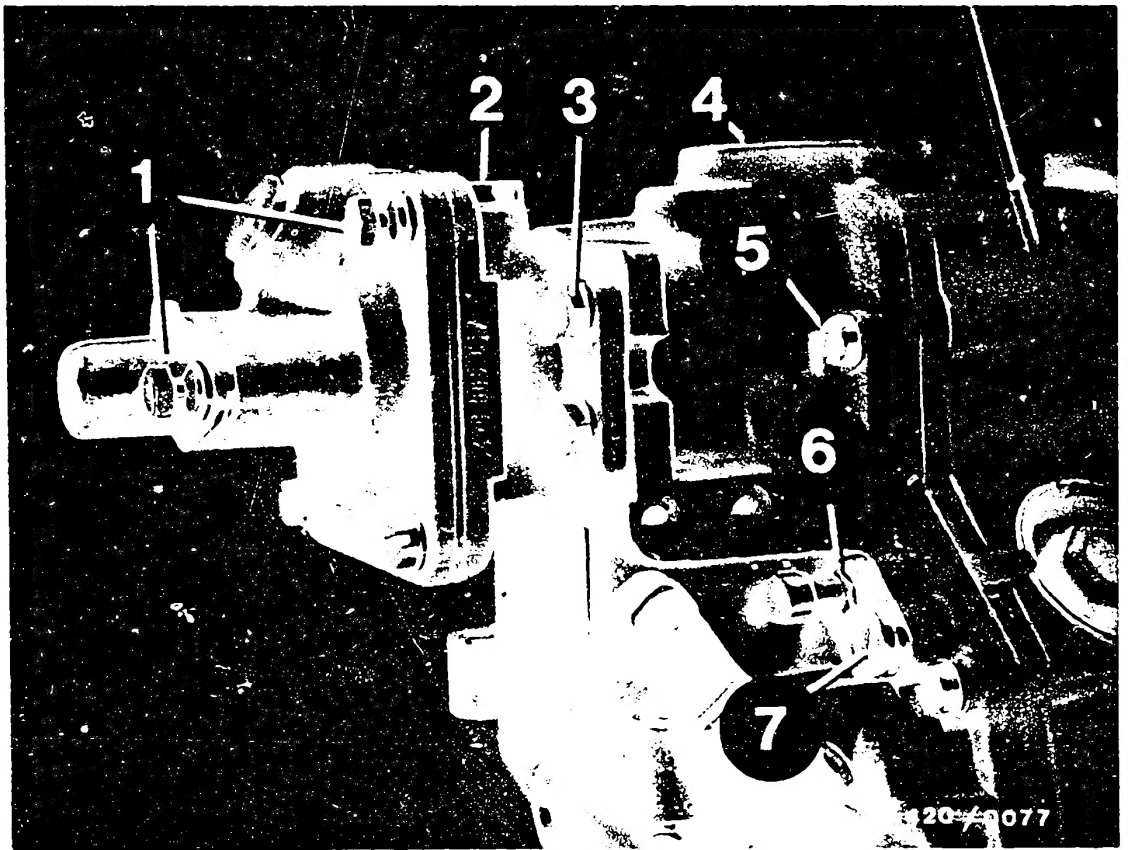
Tightening torques (continued)

1 = Hexagon nut	3.5...4.5 Nm
2 = Hexagon nut	6...8 Nm
3 = Hexagon screw	6...8 Nm
4 = Round nut	
Driver with lubricating spiral:	50...60 Nm
Driver without lubricating spiral:	65...75 Nm

**A5**

Test specifications  
RQ/RQV governors





Tightening torques (continued)

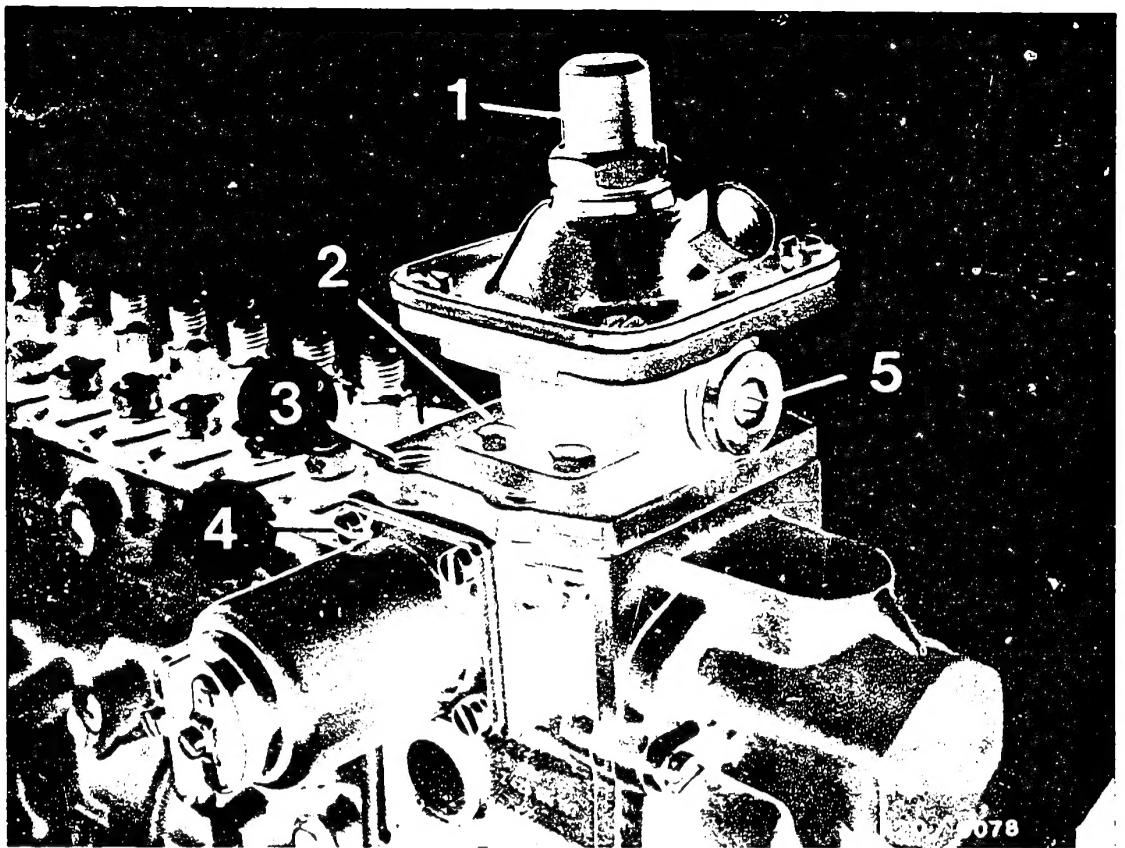
1 = Break-off screw	2... 3 Nm
2 = Screw plug	30...35 Nm
3 = Hexagon screw	5... 7 Nm
4 = Screw plug	10...15 Nm
5 = Fillister-head screw	7... 9 Nm
6 = Hexagon nut	6... 8 Nm
7 = Sealing screw	5... 7 Nm

**A6**

Test specifications

RQ/RQV governors





Tightening torques (continued)

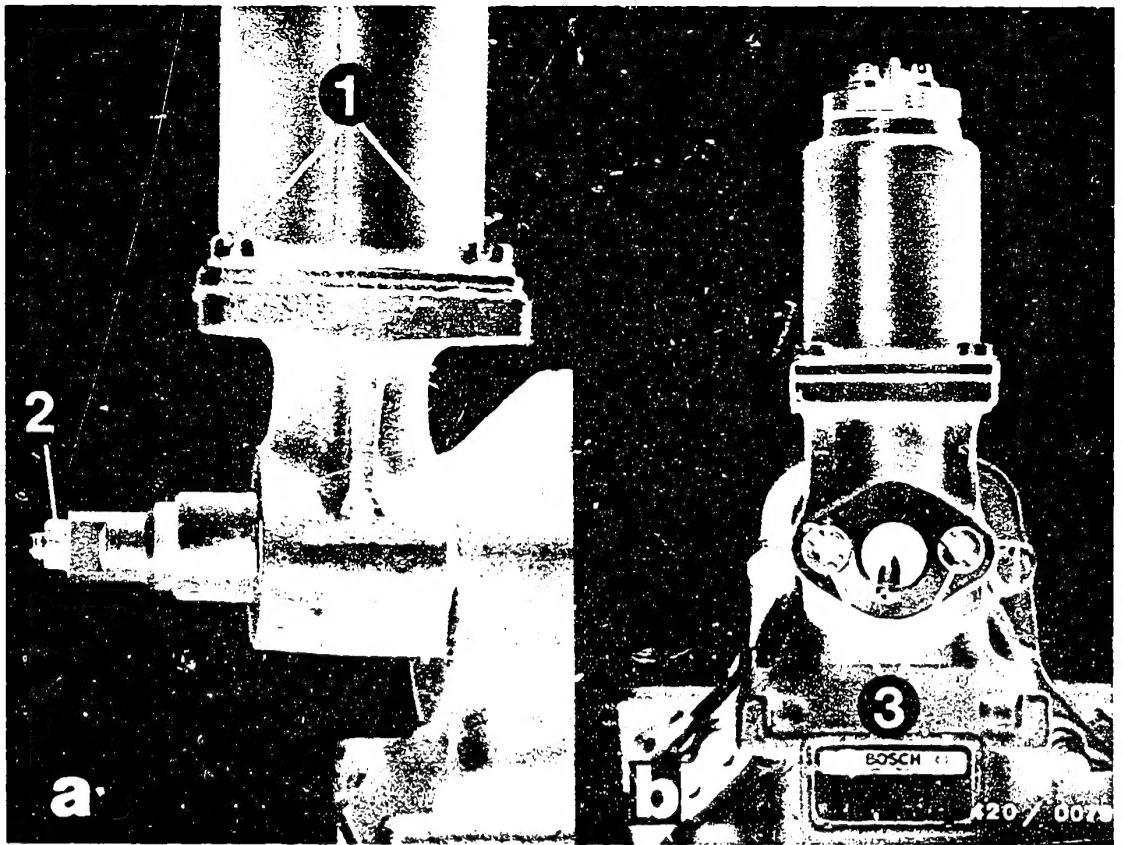
1 = Cap nut	25...35 Nm
2 = Hexagon screw	5... 7 Nm
3 = Fillister-head screw	5... 7 Nm
4 = Fillister-head screw	3... 4 Nm
5 = Screw plug	30...35 Nm

**A7**

Test specifications

RQ/RQV governors





Tightening torques (continued)

1 = Fillister-head screw	3...4 Nm
2 = Hexagon nut	3...4 Nm
3 = Threaded sleeve	4...6 Nm





### 3. TOOLS AND FIXTURES

Description	Part Number	Use
Puller	KDEP 2886	Loosening governor assy. from cam-shaft
Blade-type socket wrench	KDEP 2988	Loosening round nut of governor assy.
Measuring tool	KDEP 2984	Measuring and adjusting torque-control travel
Dial indicator	1 687 233 011	
Clamping fixture	KDEP 2894	Removing and installing governor springs
Depth gauge Caliper gauge Straightedge	Commercially available	Checking and adjusting slider dimension
Measuring shackle	1 682 329 038	
Locking sleeves	KDEP 1586	Checking and adjusting loose play of flyweights

**A10**Tools and fixtures  
RQ/RQV governors

Tools and fixtures (continued)

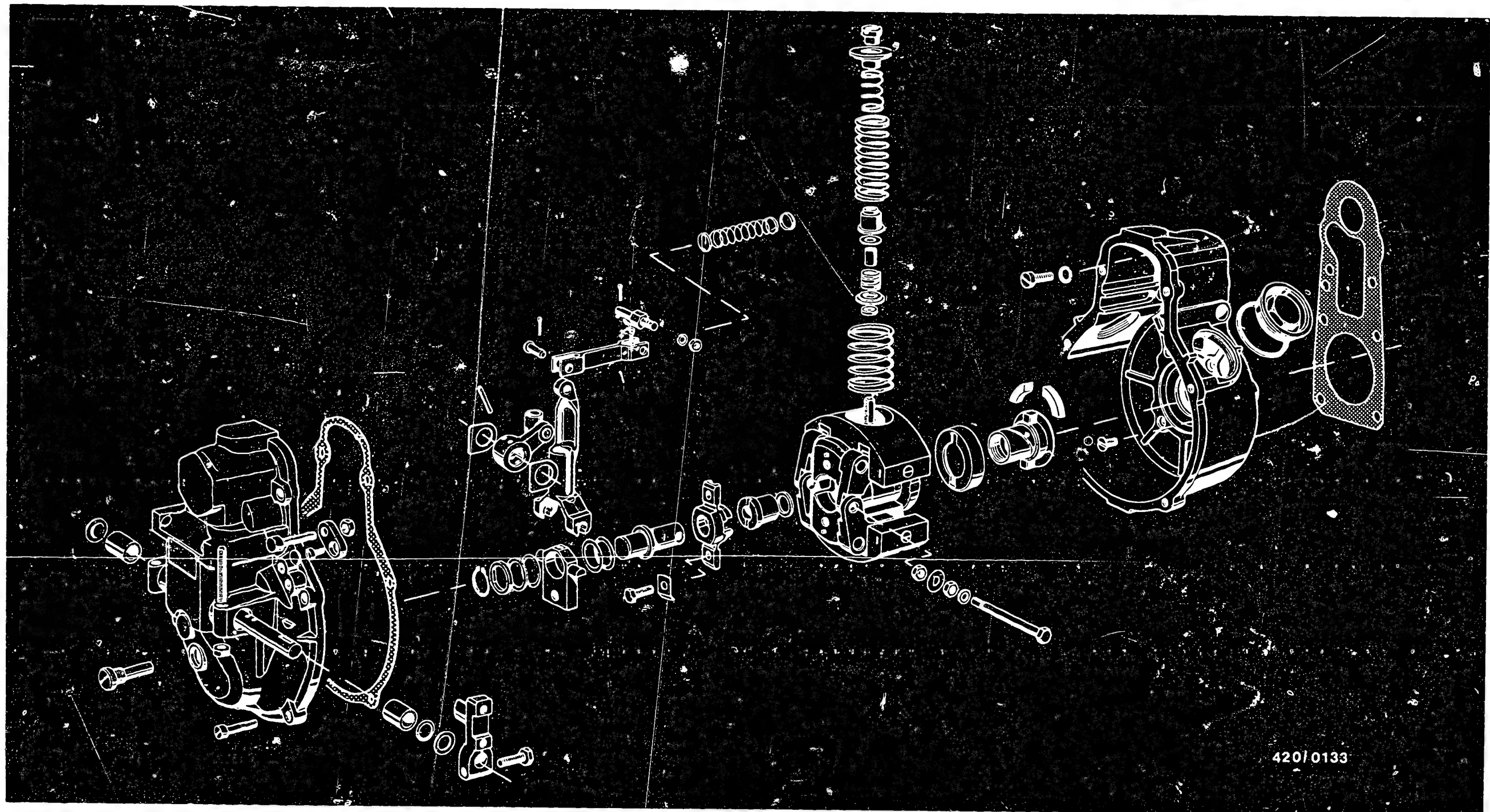
Description	Part Number	Use
Pin-type socket wrench	KDEP 2989	Adjusting governor spring preload
Press-in and out mandrel	KDEP 1584	Pressing in and out governor setting shaft bearing
Taper reamer with 1:100 taper 3 mm	Commercially available  e.g. Fa. Hahn & Kolb Borsigstr. 50 7000 Stuttgart-30 Part No. 11 676 030	Reaming control-lever shaft holes
<u>Lubricants</u> Sealant and adhesive Loctite CVV (blue)		Commercially available
Special gear grease Ft. v 27	Tube 50g Tube 250 g	5 700 052 005 5 700 052 025
Hylomar sealant VS 9844-KK	Tube 25 g	5 927 350 002
Sealing paint, yellow Kk 25 v 9	Tube 30 g	5 703 245 003

**A11**

Tools and fixtures

RQ/RQV governors





42010133

4. EXPLODED VIEW OF SERIES RQ

**A12**

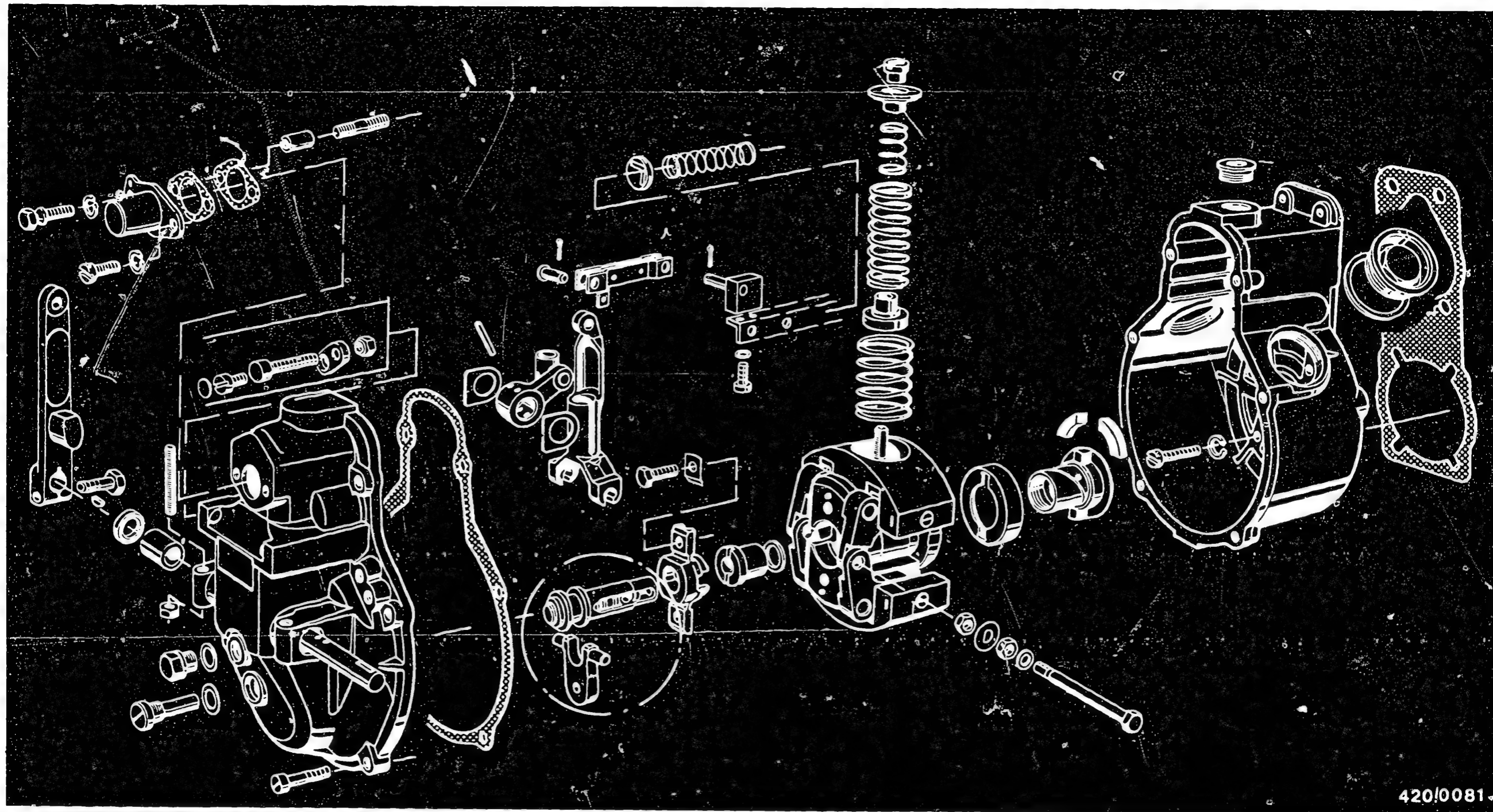
Exploded view - RQV governors  
RQ/RQV governors



**A13**

Exploded view - RQV governors  
RQ/RQV governors





420/0081

Exploded view of series RQ

Special features:

RQ governors with RQV components (encircled)

**A14**

Exploded view - RQ governors

RQ/RQV governors

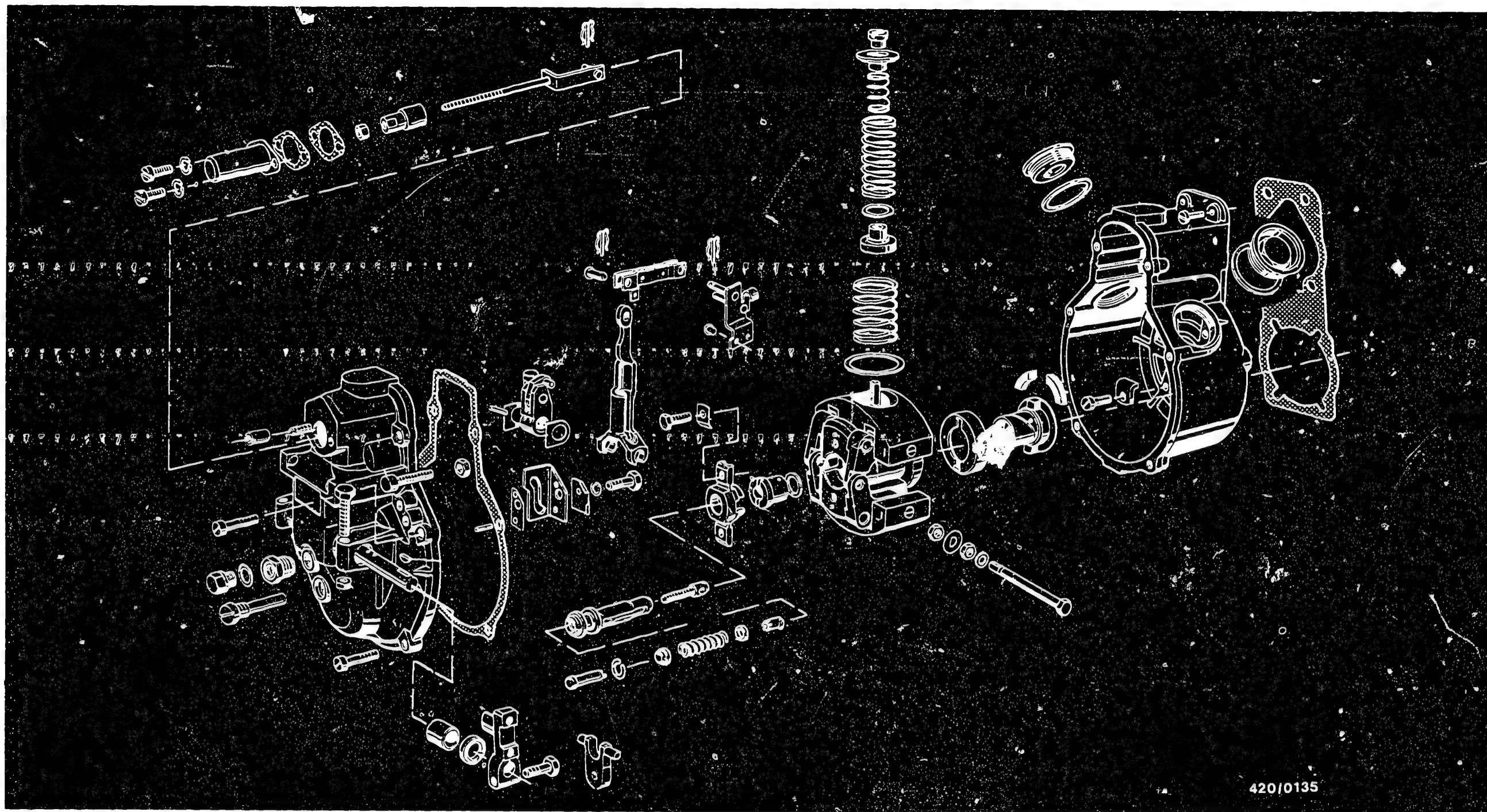


**A15**

Exploded view - RQ governors


R0/R0V governors






420/0135

Exploded view of series RQV

<b>A16</b>	Exploded view - RQV governors	
	RQ/RQV governors	

<b>A17</b>	Exploded view - RQV governors	
	RQ/RQV governors	

## 5. GENERAL INFORMATION

- Always replace worn and damaged components as well as sealing elements.
- Parts of the injection pump that are stored for a lengthy period of time must be covered and protected against corrosion.
- Leak test on governor chamber:

To prevent possible skin rashes when immersing in the test bath, grease hands beforehand with protective skin cream and wash with soap and water after test is completed.

- RQ governors with coulisse (cam plate) are repaired in the same way as RQV governors.
- Repairing of RQV governors starts on Coordinate F 1.

**A18**

General information

RQ/RQV governors



## General information (continued)

- Cleaning the components

Wash out the components in low-inflammability, commercially available cleaning agent, e.g. chlorothene NU.

Then blow out with compressed air.

- Safety regulations when handling combustible liquids

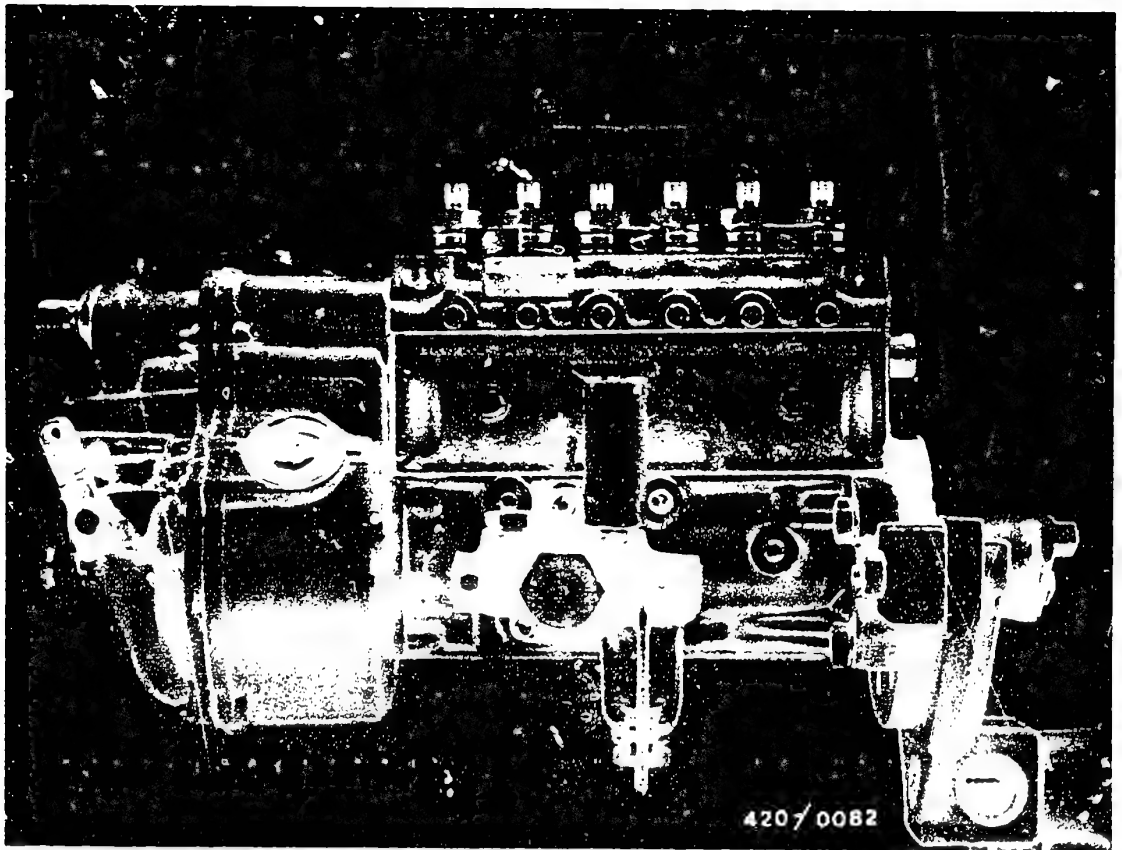
Decree on Working with Combustible Liquids (Vbf)  
issued by the Federal Ministry of Labor (BmA)

Safety Rules for Handling Chlorinated Hydrocarbons  
for the workshop                   ZH 1/222  
for the employee                   ZH 1/119

issued by the Central Association for Industrial  
German Employers' Liability Insurance Associations  
(Central Association for Accident Prevention and  
Industrial Medicine), Langwartweg 103, 5300 Bonn 5.

In countries outside the Federal Republic of Germany,  
observe the corresponding local regulations.





## 6. DISMANTLING RQ GOVERNORS

### Preliminary operations:

- Clamp injection pump according to type series and kind of mounting (follow repair instructions).
- If attached, remove drive components (multi-plate clutch, gear or timing device) using suitable KDEP or commercially available tools.
- Mount and tighten driving coupling to suit cone diameter of camshaft.

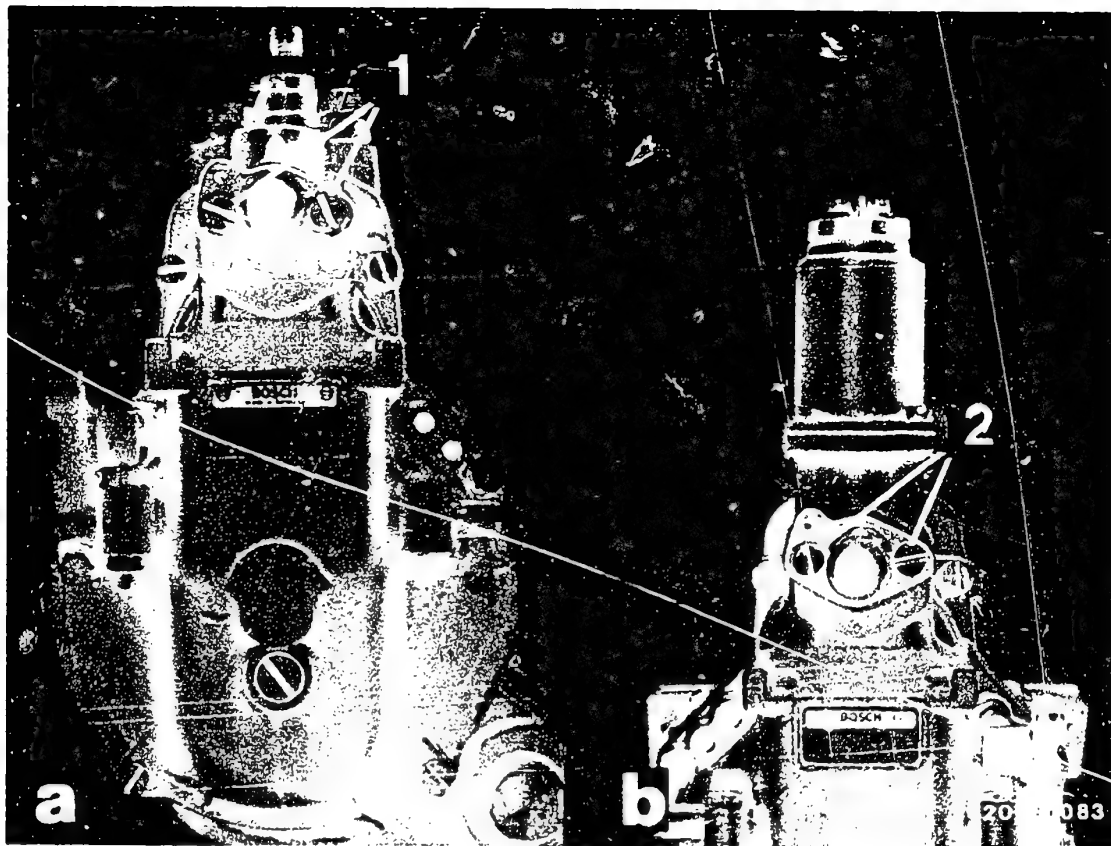
**B1**

Dismantling the governor

RQ governors







Unscrew fastening screws (picture a-1) and remove control-rod stop for starting fuel delivery limitation (if applicable).

In case of versions of governor with electrically cancelled starting fuel delivery (EES) (picture b), remove protective cap fastening screws (2).

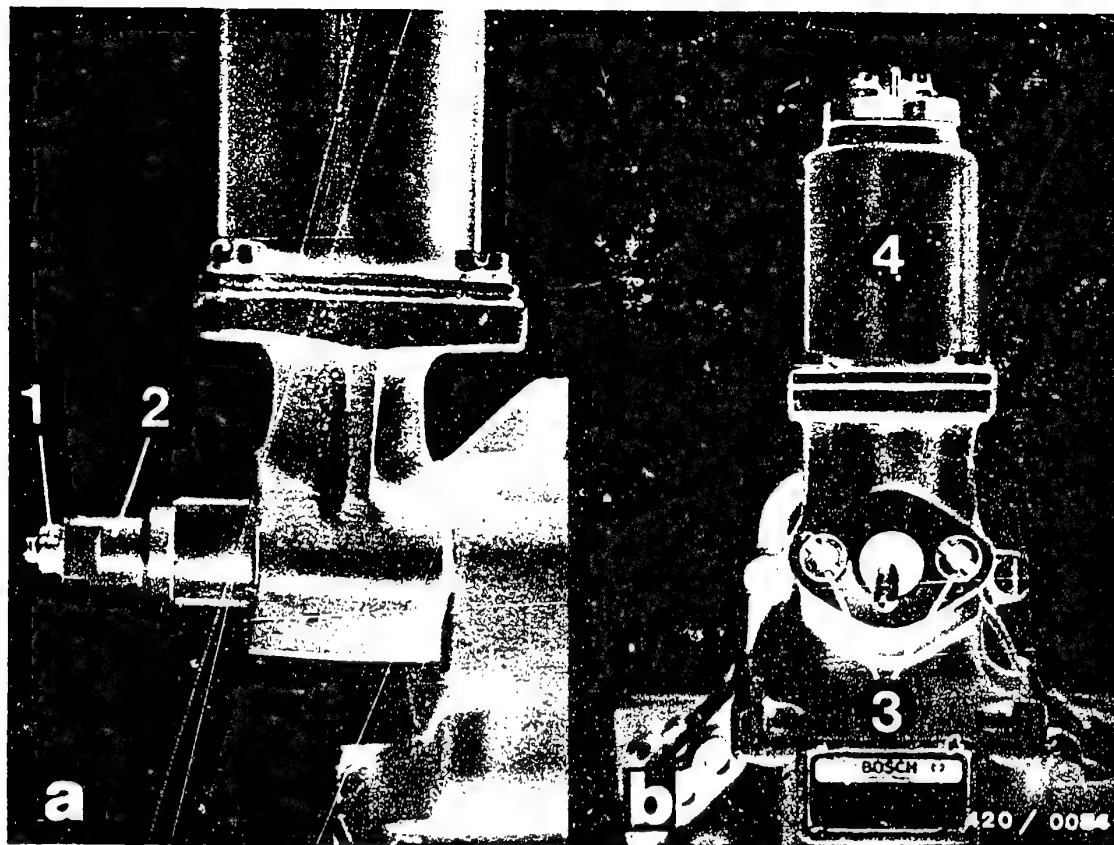
Note:

Have a sufficient number of storage boxes available for storing the components.

**B2**

Dismantling the governor  
RQ governors





Unscrew hexagon nut (1) and threaded bushing (2) from threaded pin (picture a).

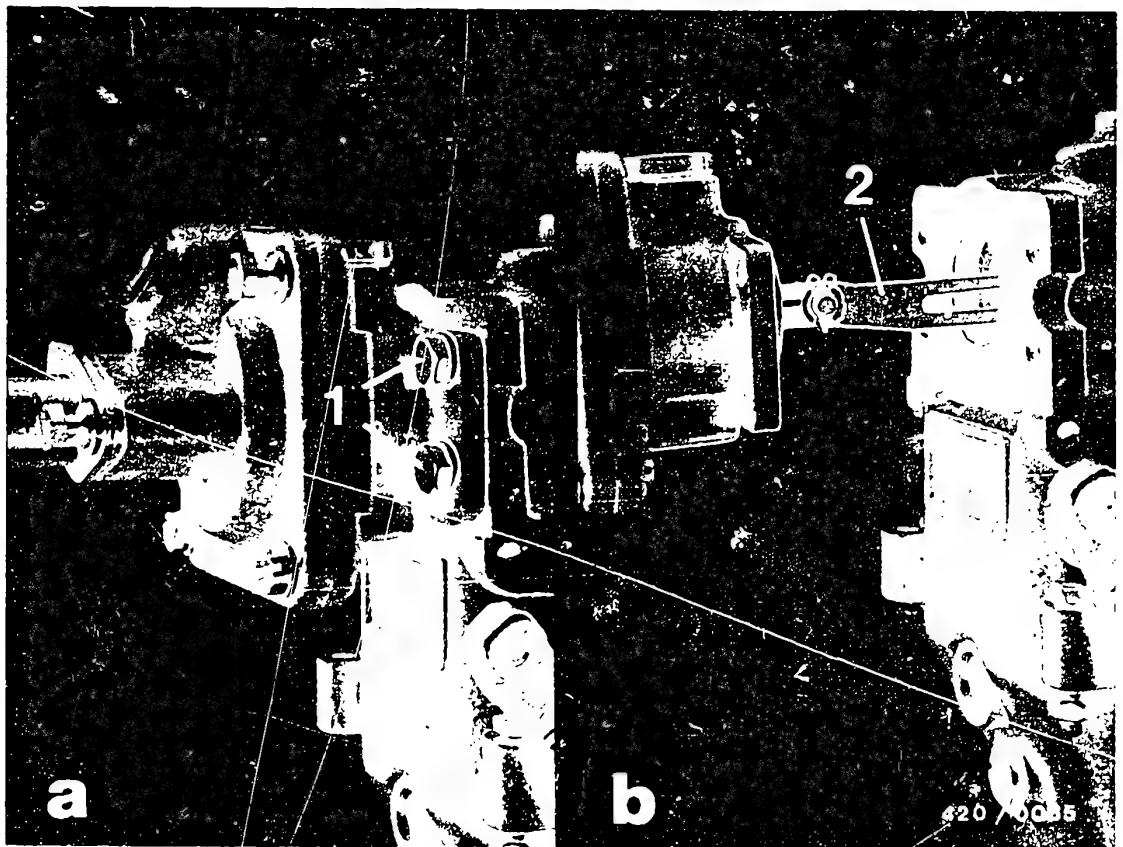
Unscrew threaded sleeves (3) and take off solenoid (4) (picture b).

**B3**

Dismantling the governor

RQ governors





In case of versions with manifold-pressure compensator mounted on governor cover, unscrew fastening screws (picture a-1).

Bring control lever up against shutoff stop.

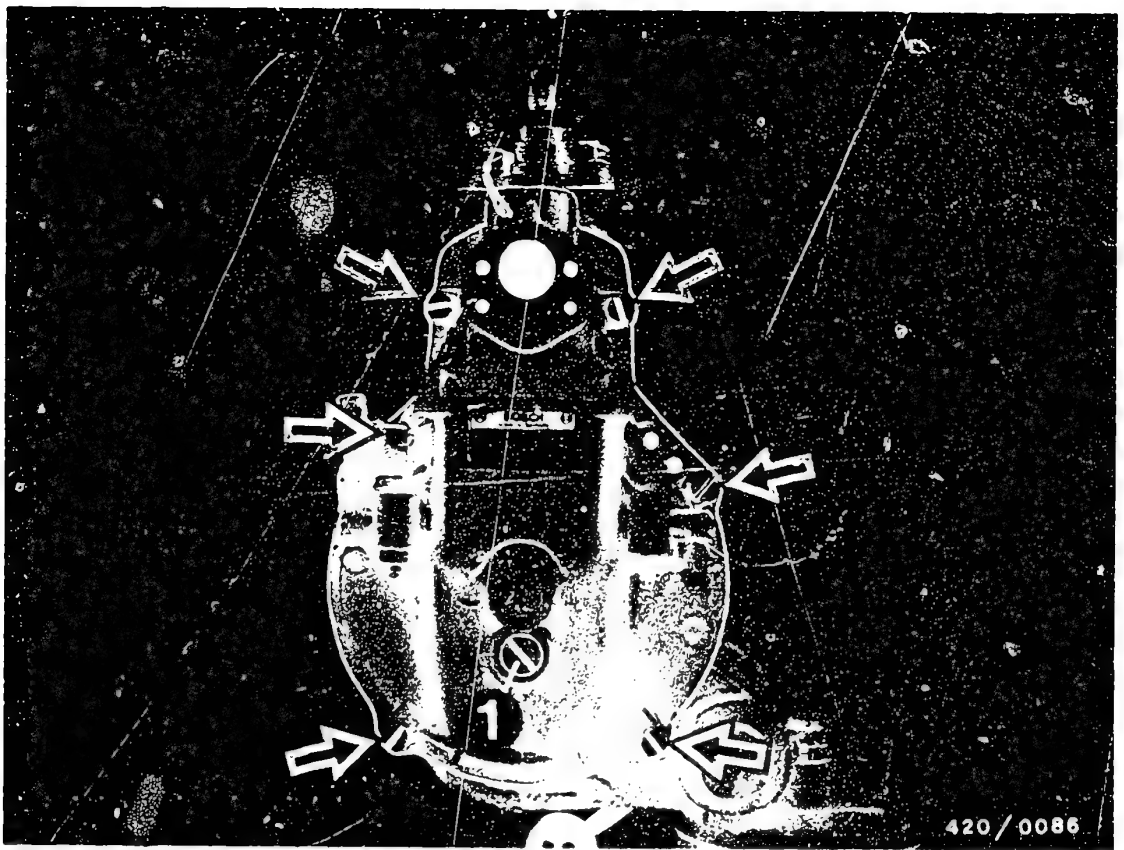
With strap (picture b-2) turned through 90° to the left, pull manifold-pressure compensator out of governor cover.

**B4**

Dismantling the governor

RQ governors





Unscrew guide pin (1) and fastening screws of governor cover (arrows).

Separate governor cover from governor housing, carefully tapping with a rubber hammer if necessary.

Note:

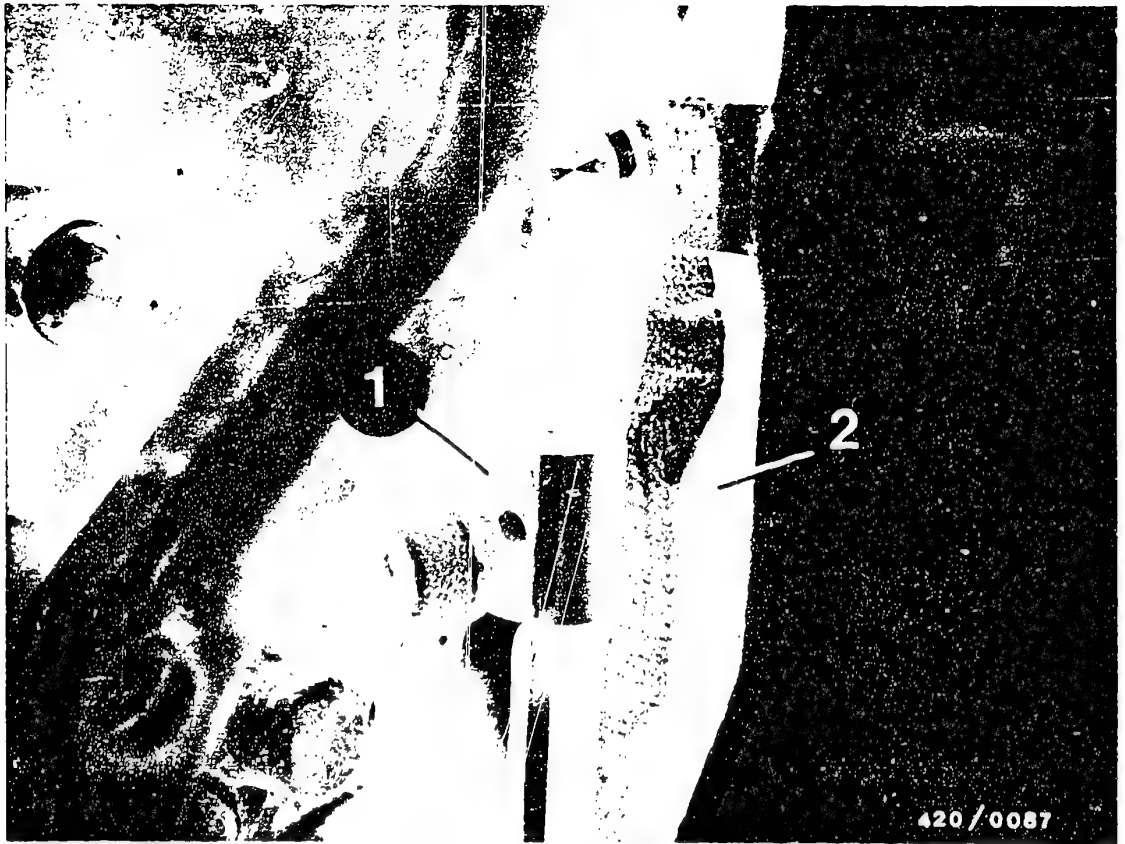
Catch escaping oil in a pan.

**B5**

Dismantling the governor

RQ governors





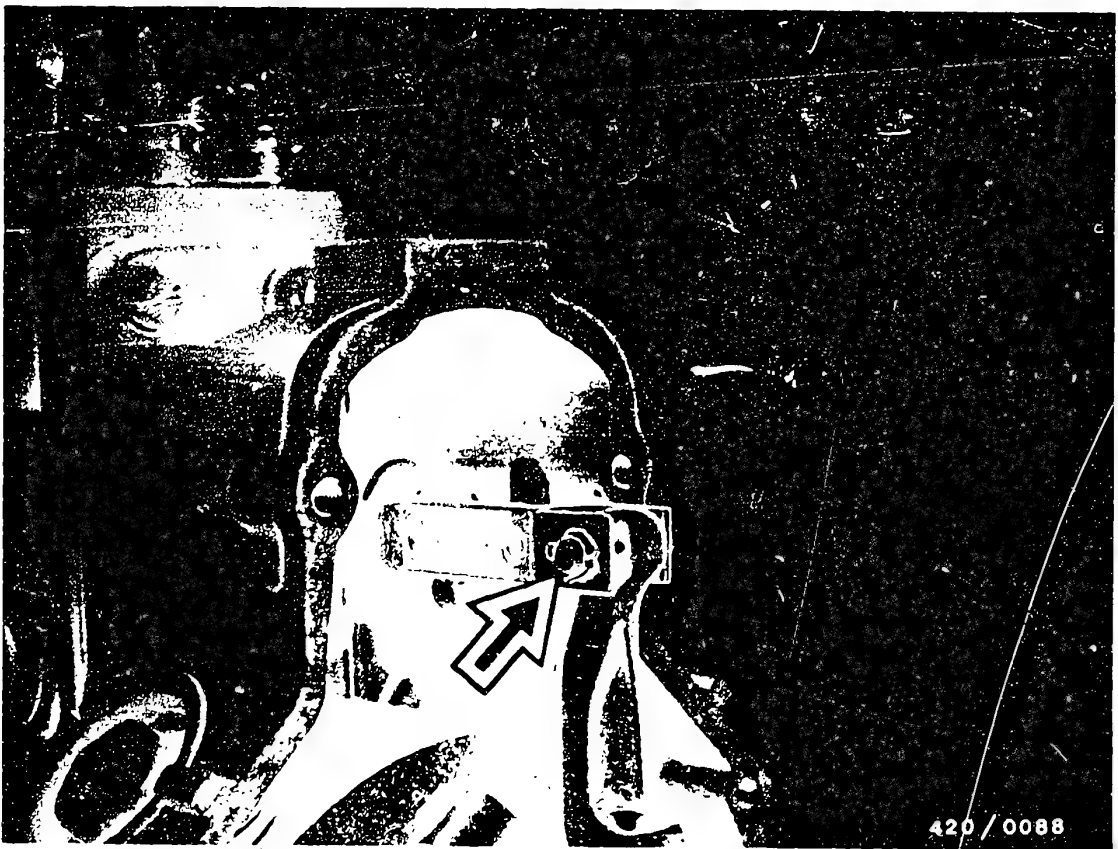
Place control lever in a vertical position and withdraw guide block (1) upward out of fulcrum lever (2).

**B6**

Dismantling the governor

RQ governors





Remove split pin or locking clamp from retaining pin (arrow) and pull pin out of link fork and fulcrum lever.

Bring link fork up against governor housing and hold in place with rubber band.

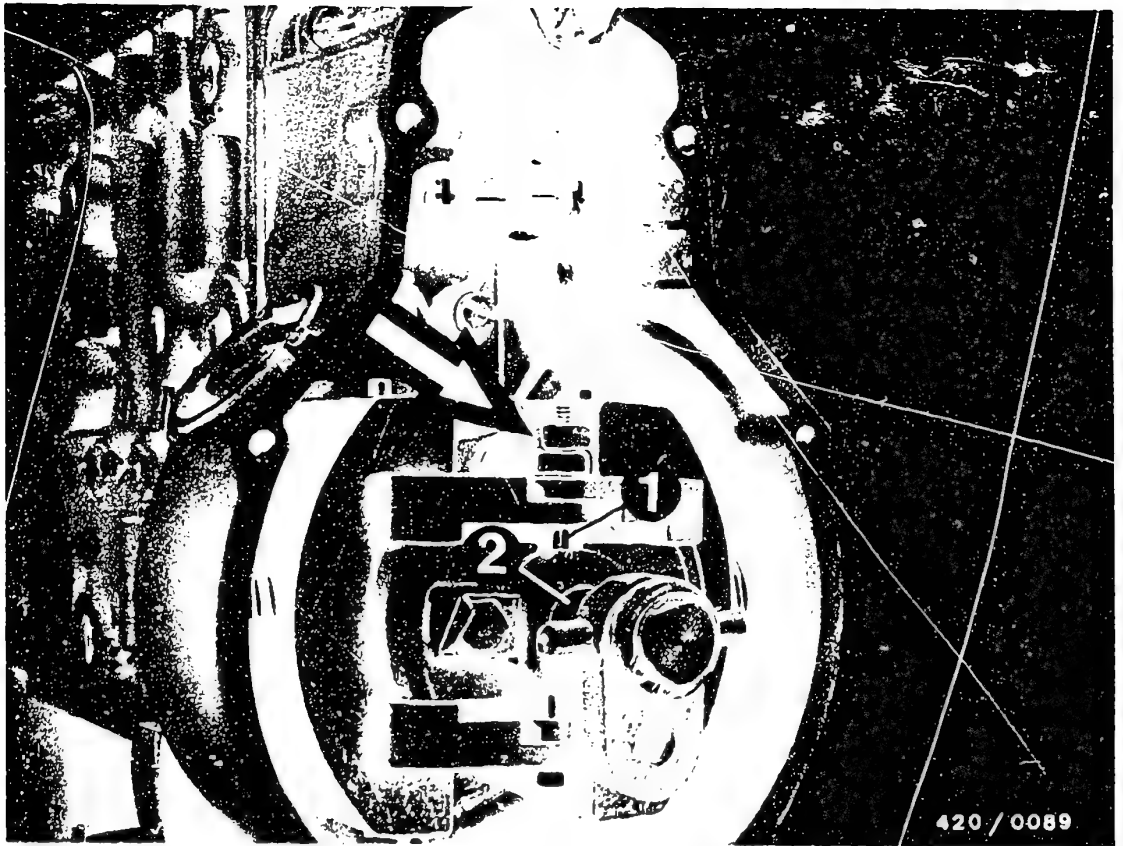
Release fulcrum lever from slider (tilt through  $90^\circ$ ).

**B7**

Dismantling the governor

RQ governors





420 / 0089

Bend up tab washer (arrow) on coupling pin (1) and unscrew hexagon nuts.

Pull out coupling pin from above.

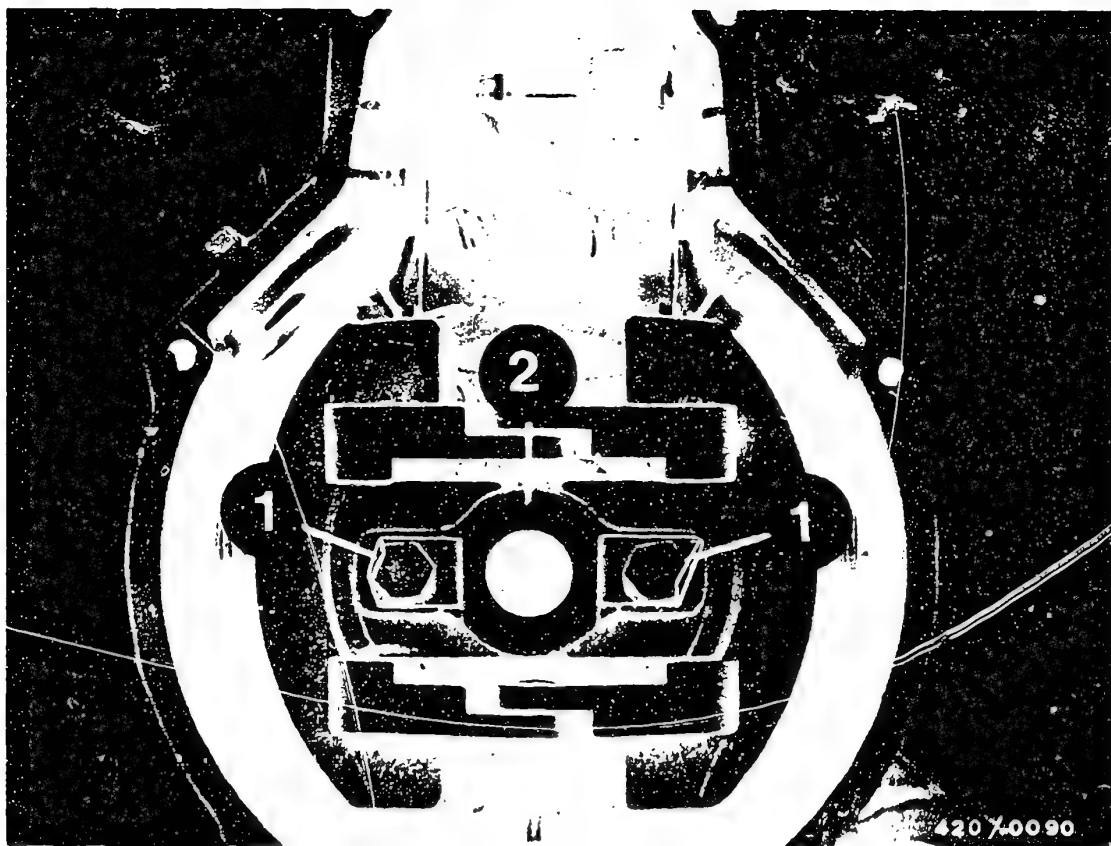
Pull bearing pin (2) out of guide bushing.

**B8**

Dismantling the governor

RQ governors





Bend up tab washers (1) and unscrew fastening screws of guide bushing (2).

Remove guide bushing.

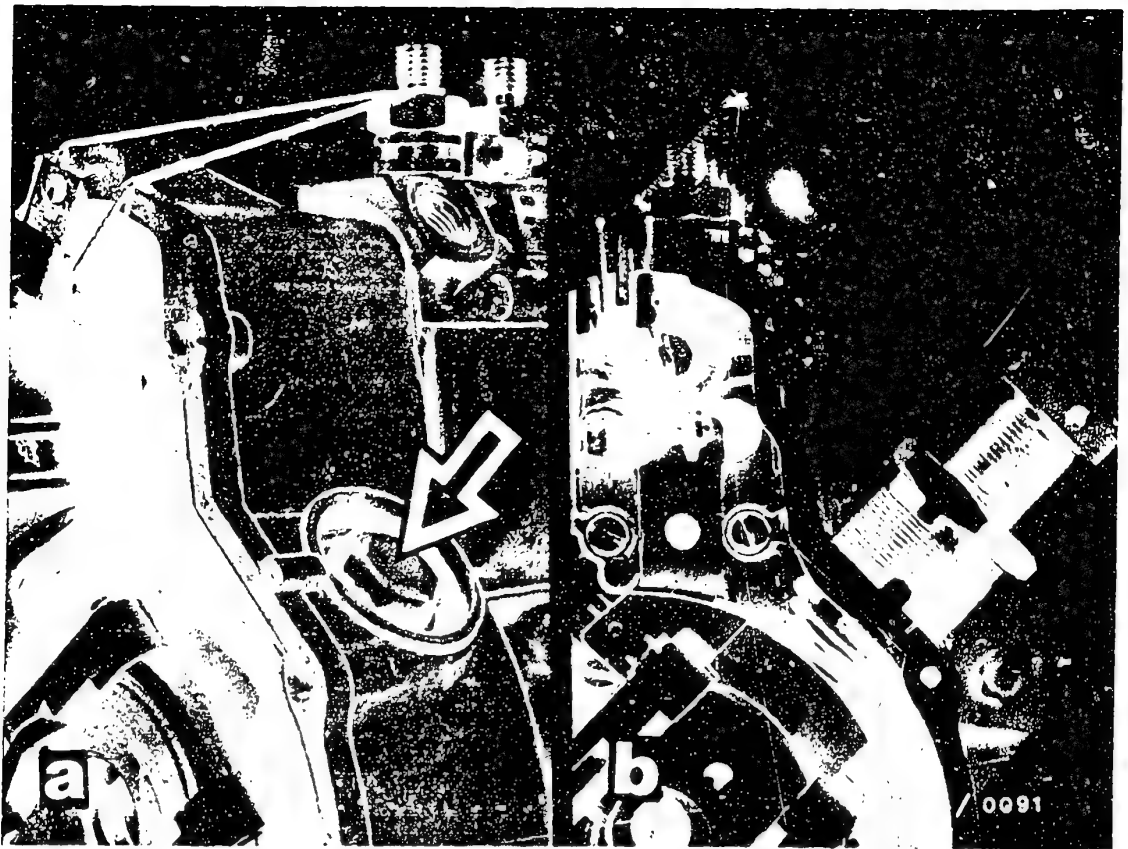
**B9**

Dismantling the governor

RQ governors







Unscrew screw plug (arrow) from governor housing (picture a).

Screw clamping fixture KDEP 2894 into governor housing and compress governor springs (picture b).

Note:

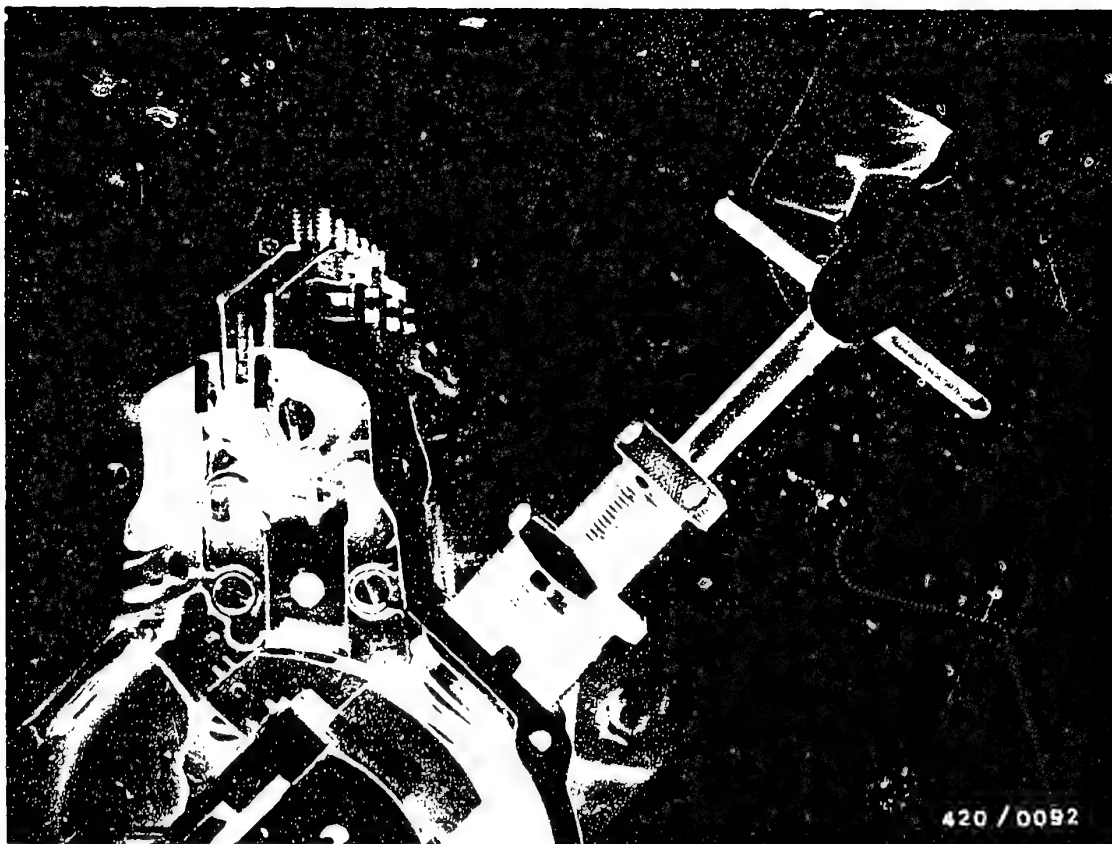
Governor assembly need not be dismantled if no repairs are being performed on the governor.

**B10**

Dismantling the governor

RQ governors





Using pin-type socket wrench KDEP 2989, unscrew round nut (adjusting nut) from threaded pin of governor assembly.

Relax governor springs by unscrewing clamping fixture.

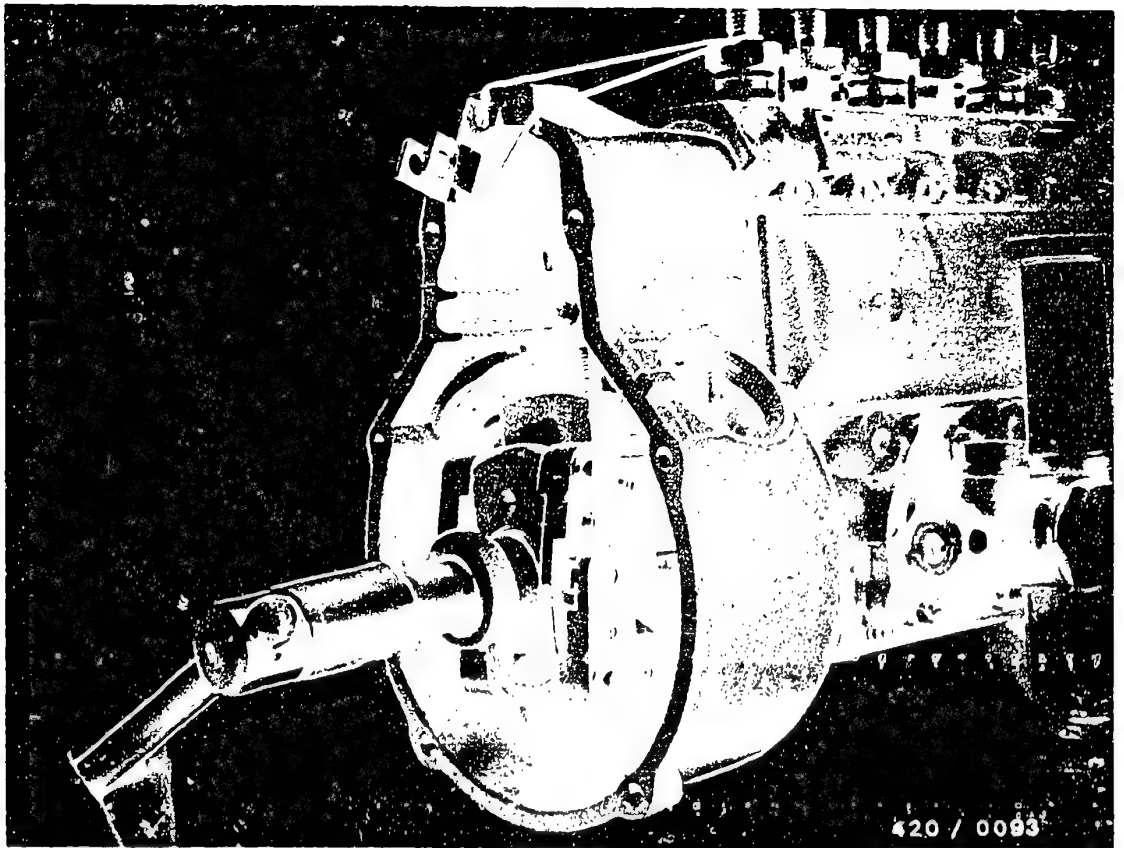
Remove governor springs, torque control (if applicable) and shims from flyweight assemblies.

**B11**

Dismantling the governor

RQ governors





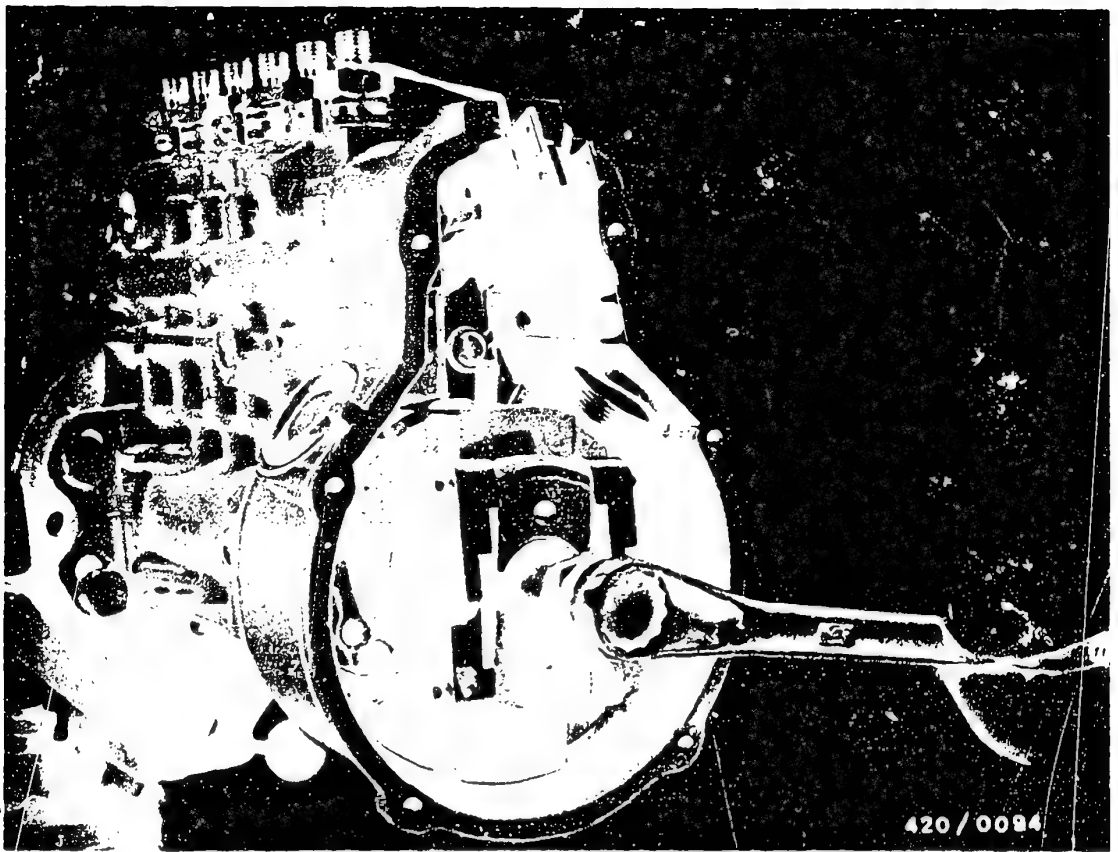
Using socket wrench KDEP 2933, loosen round nut of governor assembly and unscrew.

**B 12**

Dismantling the governor

RQ governors





Using puller KDEP 2886, loosen governor assembly from camshaft.

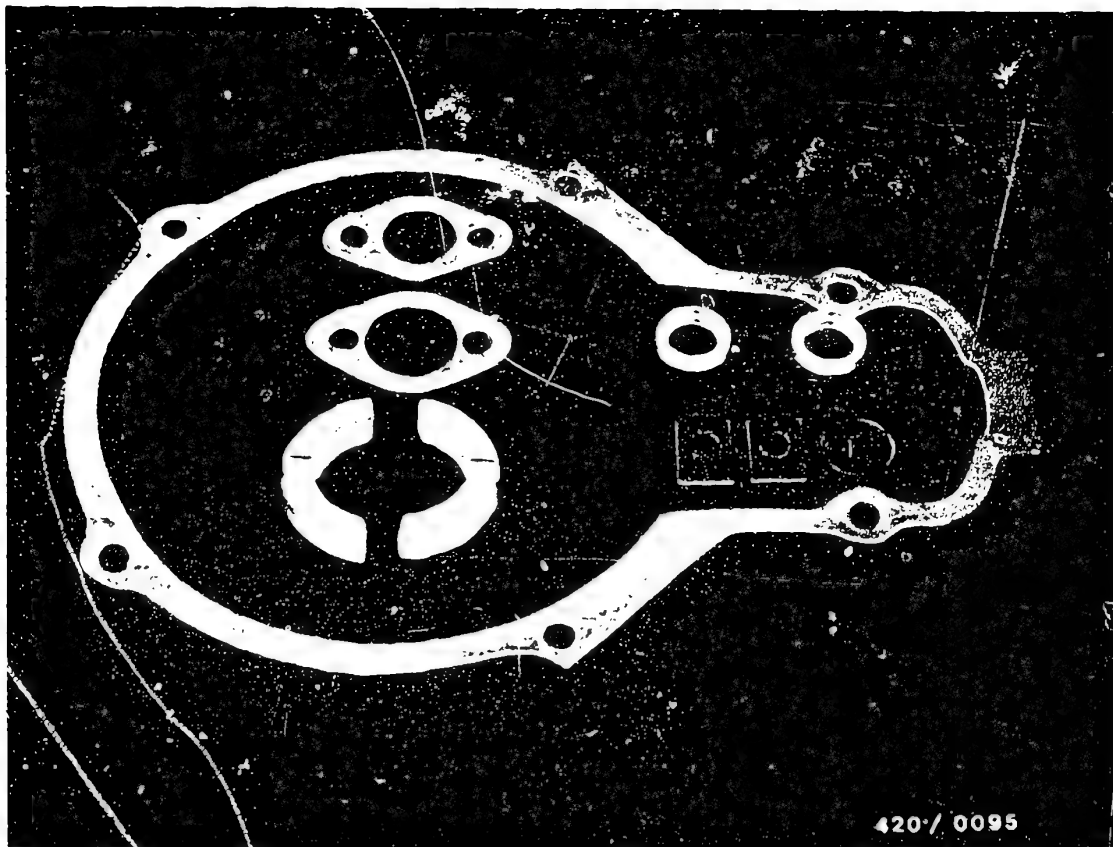
Unscrew puller from governor assembly.

Remove shim for longitudinal play adjustment.

**B 13**

Dismantling the governor  
RQ governors





### 7. CHECKING THE COMPONENTS

Wash out all components thoroughly so that they are clean.

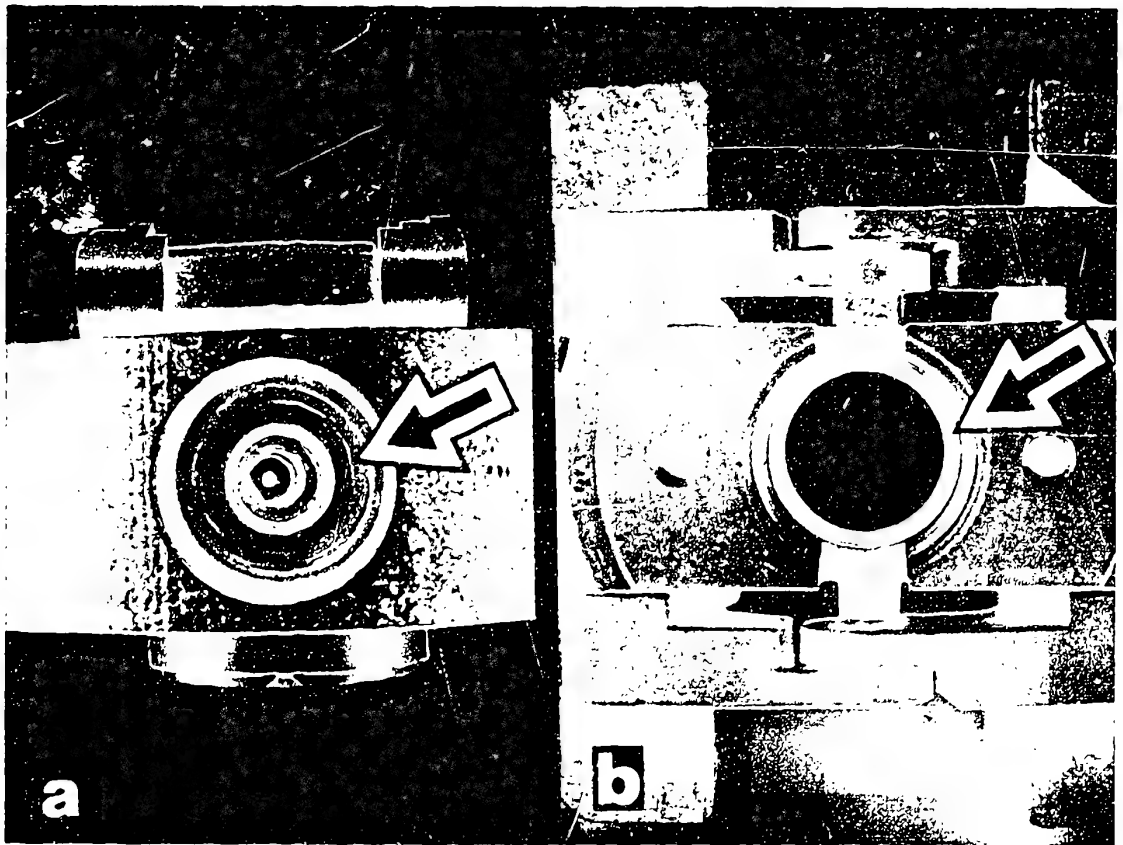
Replace worn or damaged components.

Always replace flat flange gaskets, radial-lip-type oil seals, rubber buffers and tab washers.

**B14**

Checking the components  
RQ governors





### Checking the governor assembly

Replace the governor assembly if damaged as listed below:

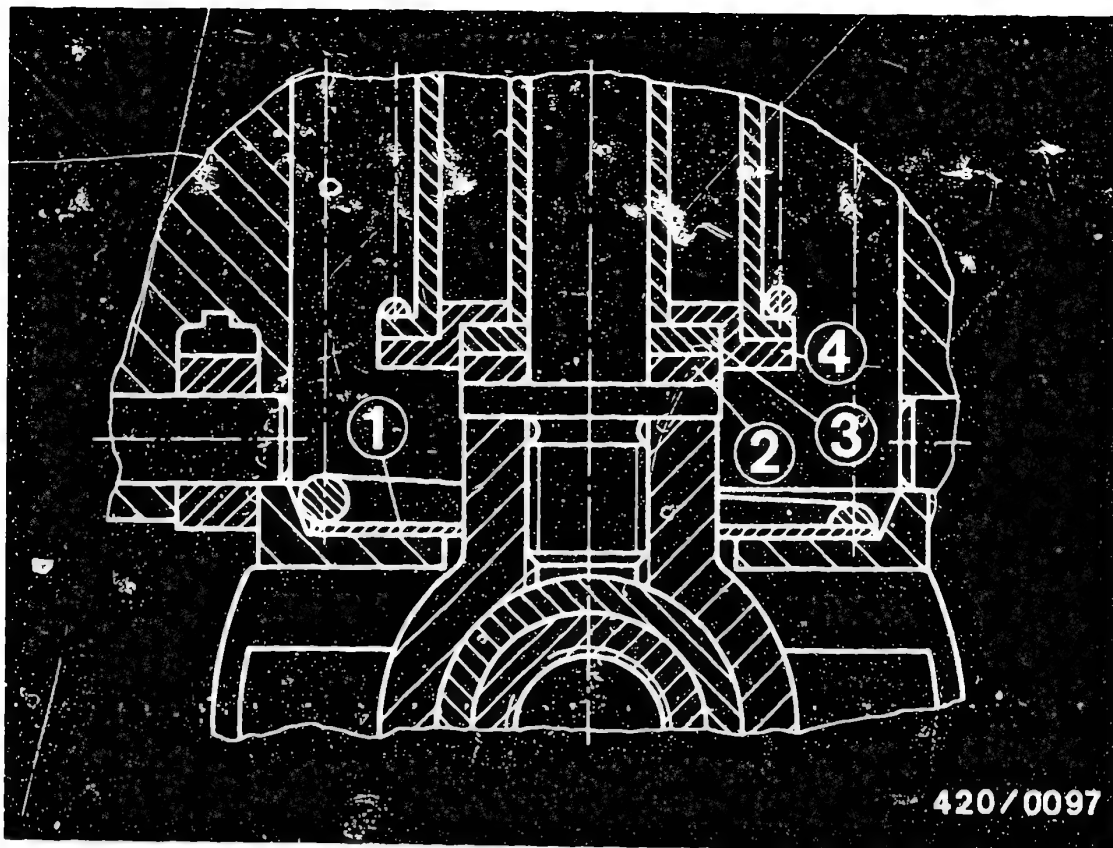
- Worn bottoms of flyweights (picture a-arrow)
- Worn web (picture b-arrow)
- Loose retaining pins (movable in axial direction)
- Wear on bell cranks
- Bent threaded pins

**B15**

Checking the components

RQ governors





420/0097

To prevent renewed wearing, the hardened washer 2 420 101 027 (1) can be added in the bottom of the fly-weights on a new governor assembly.

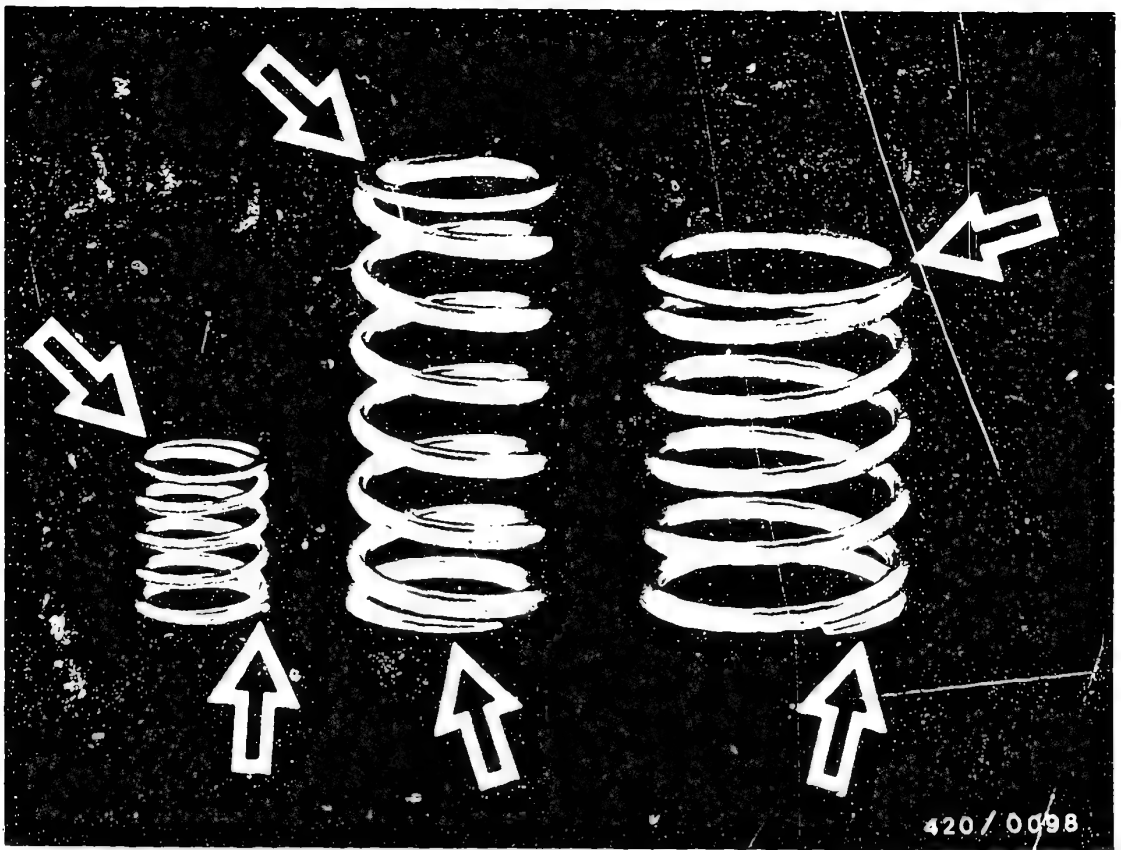
To prevent the idle stage from being reduced by the thickness of the added washer, the washer 2 420 100 025 (3) must be added between inner spring seat (4) and shim (2).

**B 16**

Checking the components

RQ governors





### Checking the governor springs

Governor springs, which are corroded or whose surface is damaged, must be replaced due to the danger of breakage.

Check in particular the region of the seating surface of the first turn (arrows).

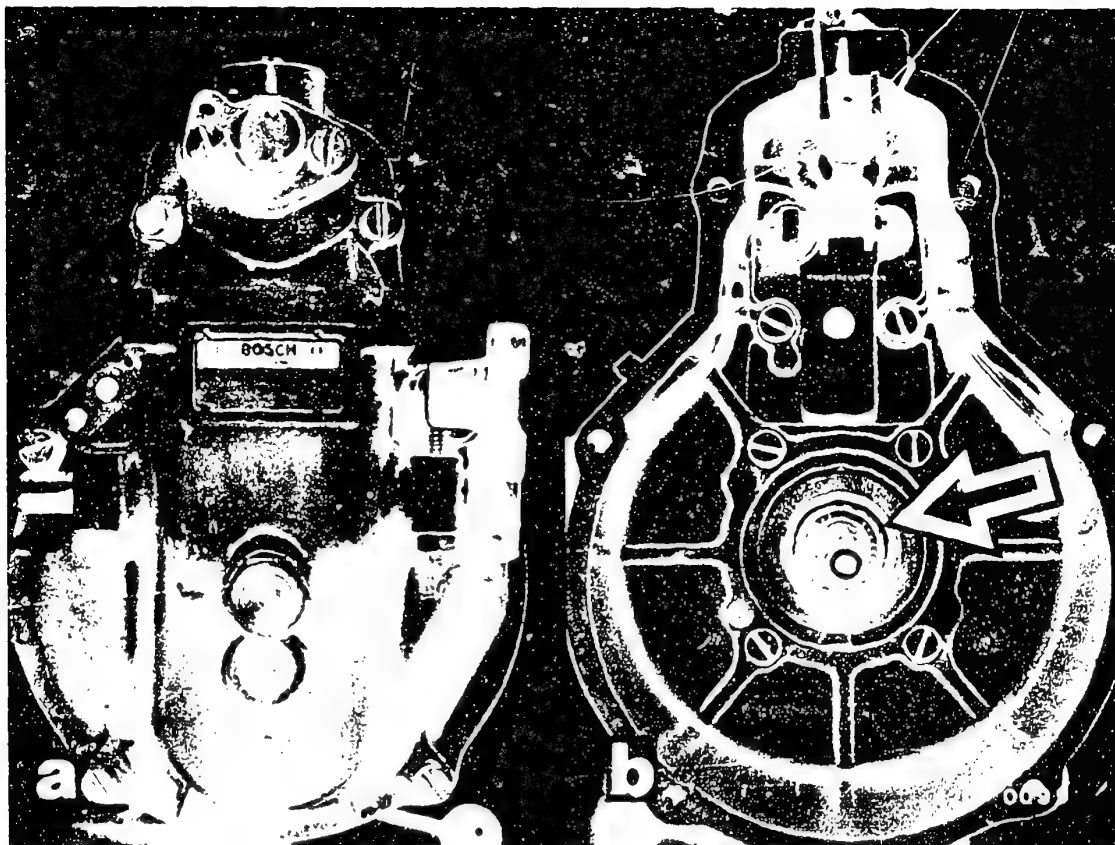
**B17**

Checking the components

RQ governors







Checking the governor cover and housing

Visually examine the following:

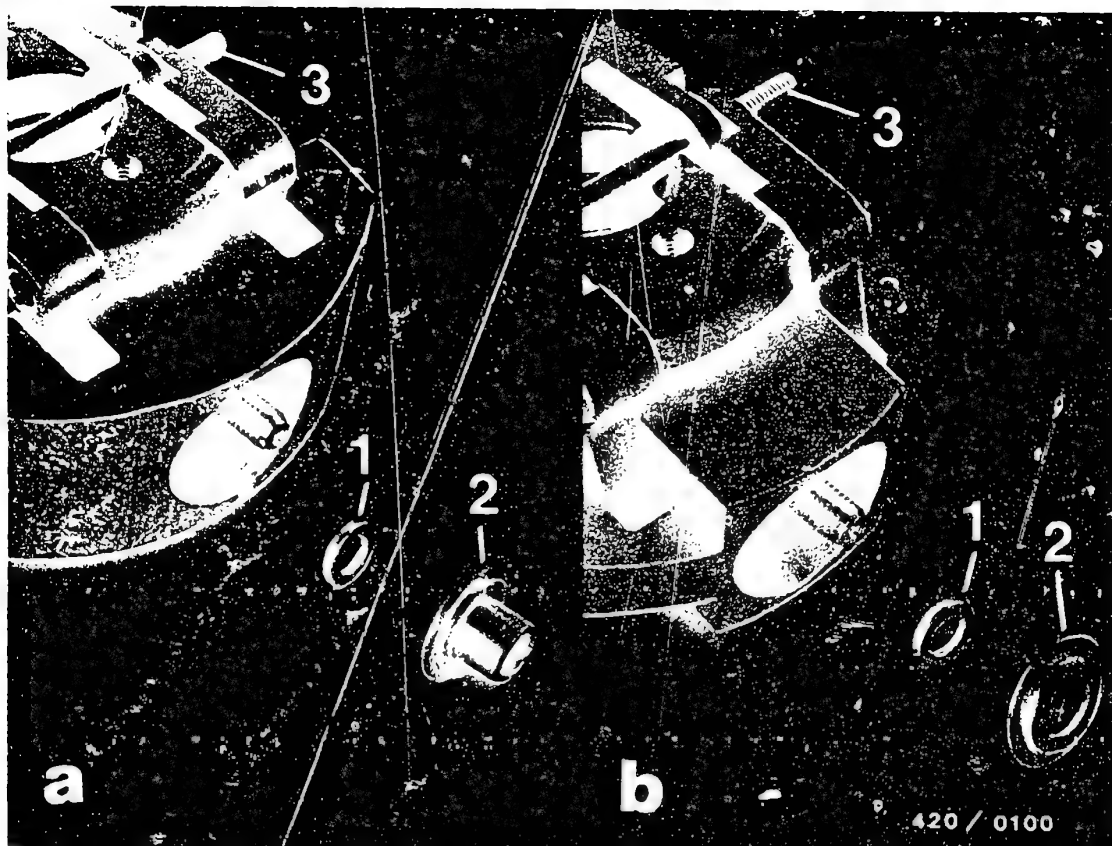
- Threads on stay bolts and inserts
- Camshaft bearing in governor housing for cracks (picture b-arrow)
- Flatness of sealing surfaces.

**B18**

Checking the components

RQ governors





## 8. REPAIRING RQ GOVERNORS

To check and adjust the loose play of the flyweights, install shim (1) and spring seat (2) in both flyweight assemblies.

Provisionally insert coupling pin (3).

### Note:

Insert shim (1) with chamfer toward bottom of flyweights.

Governor assembly - picture a = without torque control

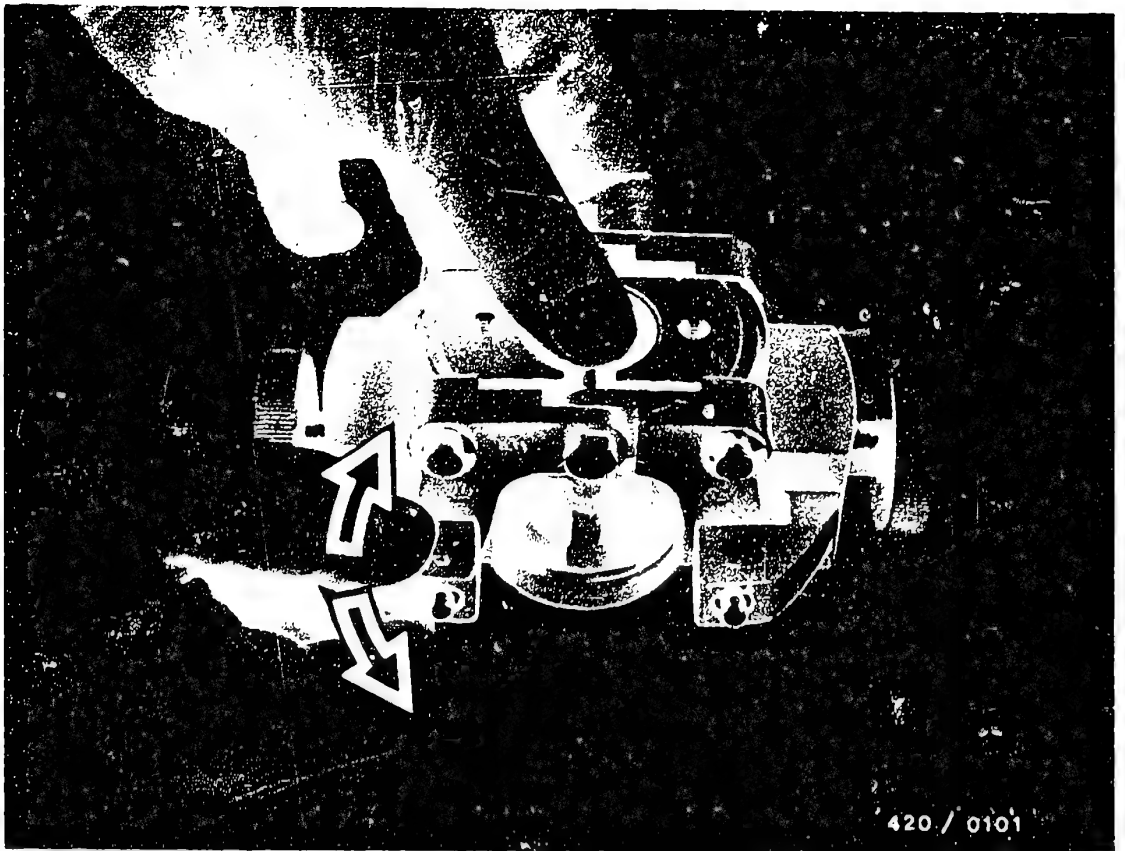
Governor assembly - picture b = with torque control

**C1**

Repairing the governor

RQ governors





Lay flat the drive end of the governor assembly.

Fasten shims and spring seats by screwing in locking sleeves KDEP 1586.

By pressing on the coupling pin, bring flyweights up against spring seats.

Try to turn flyweights backward and forward about the pivot pins (picture).

Both flyweights must be in uniformly firm contact without play.

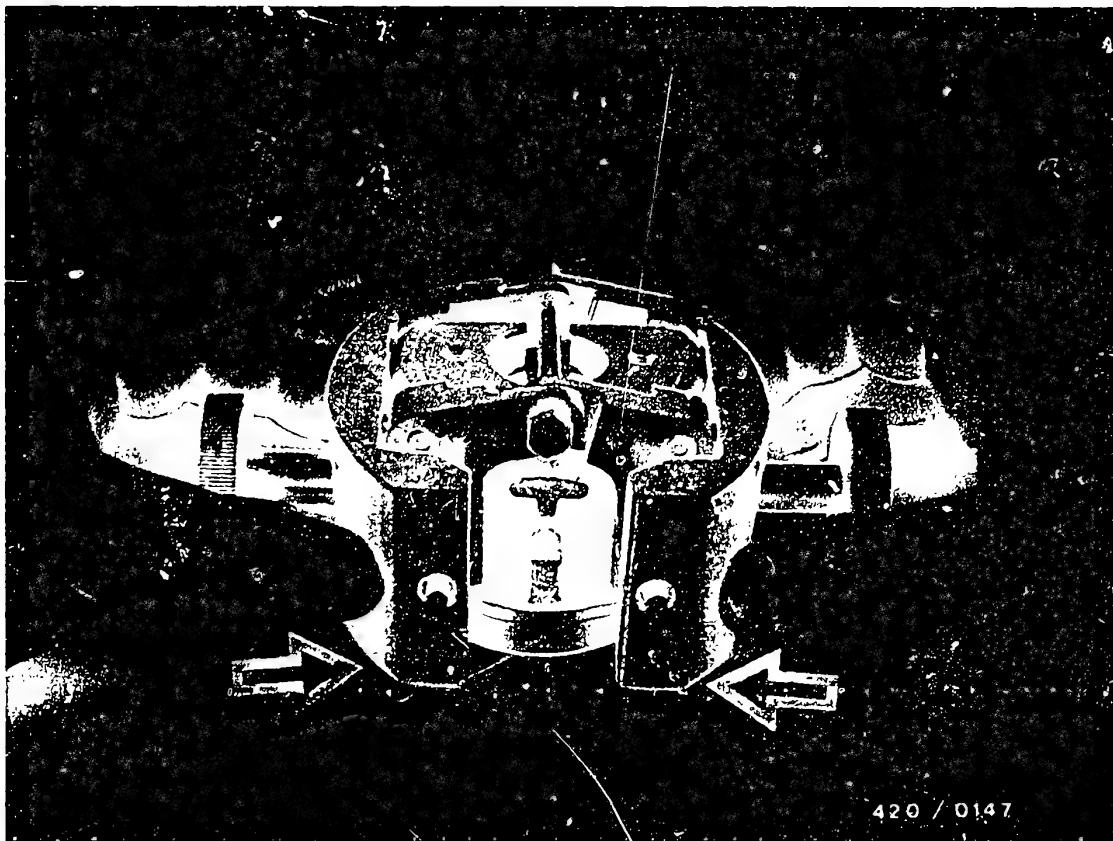
If one of the flyweights can be moved, then on one side exchange the shim for another of different dimensions.

**C2**

Repairing the governor

RQ governors





After adjusting the loose play, measure and adjust the idle stage of the governor assembly.

#### Preliminary operations

Do not remove the components which have been measured up and mounted to adjust the loose play.

Lay flat the drive end of the governor assembly.

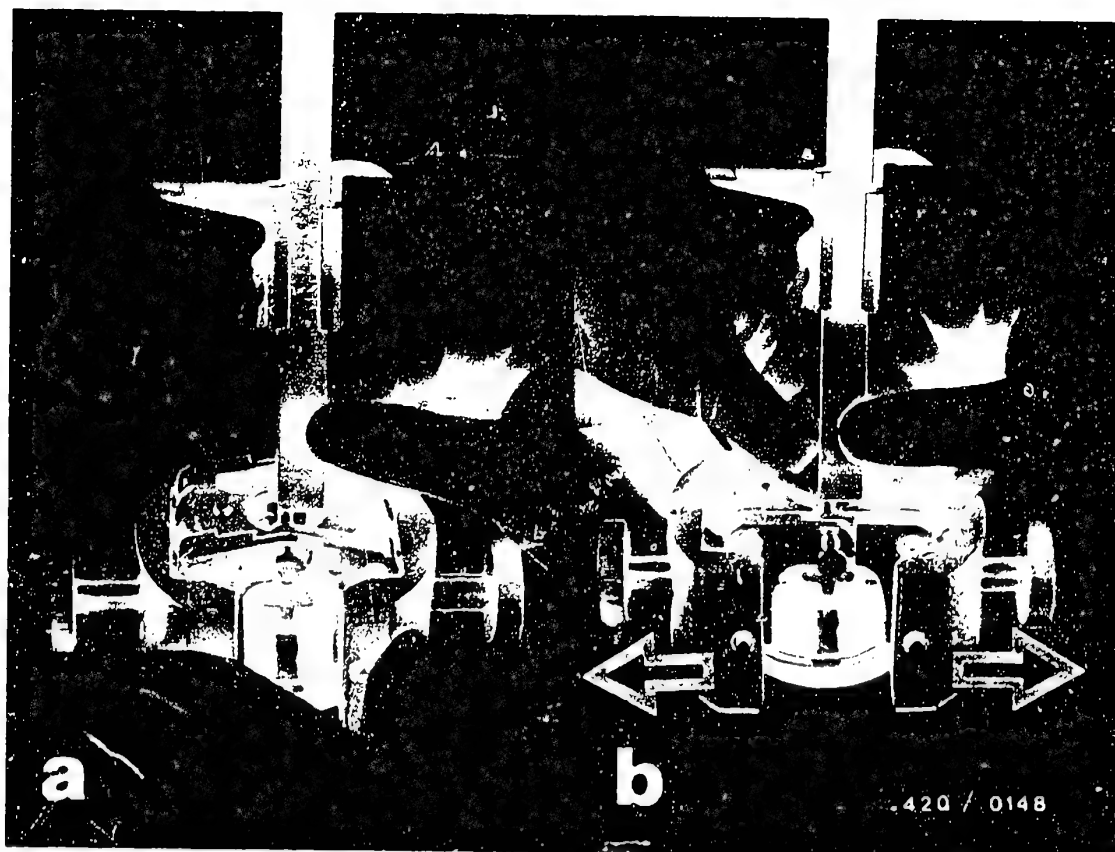
Press flyweight assemblies together (arrows)

**C3**

Repairing the governor

RQ governors





Using caliper gauge, measure distance between coupling pin and seating surface. Make note of measurement. (Picture a).

Then pull the flyweight assemblies apart until the spring seats make contact (picture b-arrows).

Press on coupling pin and again measure the distance between coupling pin and seating surface.

The difference between both measurements is the idle stage.

There are two tolerance ranges depending on the design of the idle stage.

Specification: 5.6...6.1 mm or 6.6...7.1 mm.

**C4**

Repairing the governor

RQ governors



Note:

To establish the appropriate tolerance range, read off the control-rod travel given in the test-specification sheet under "sleeve position" (slider position).

Control-rod travel	Specification for idle stage
15.5...16.5 mm	5.6...6.1 mm
19.2...20.8 mm	
13.0...14.6 mm	6.6...7.1 mm

If the measurement result is not within the appropriate tolerance range, adjust the idle stage by changing the shims with different dimensions.

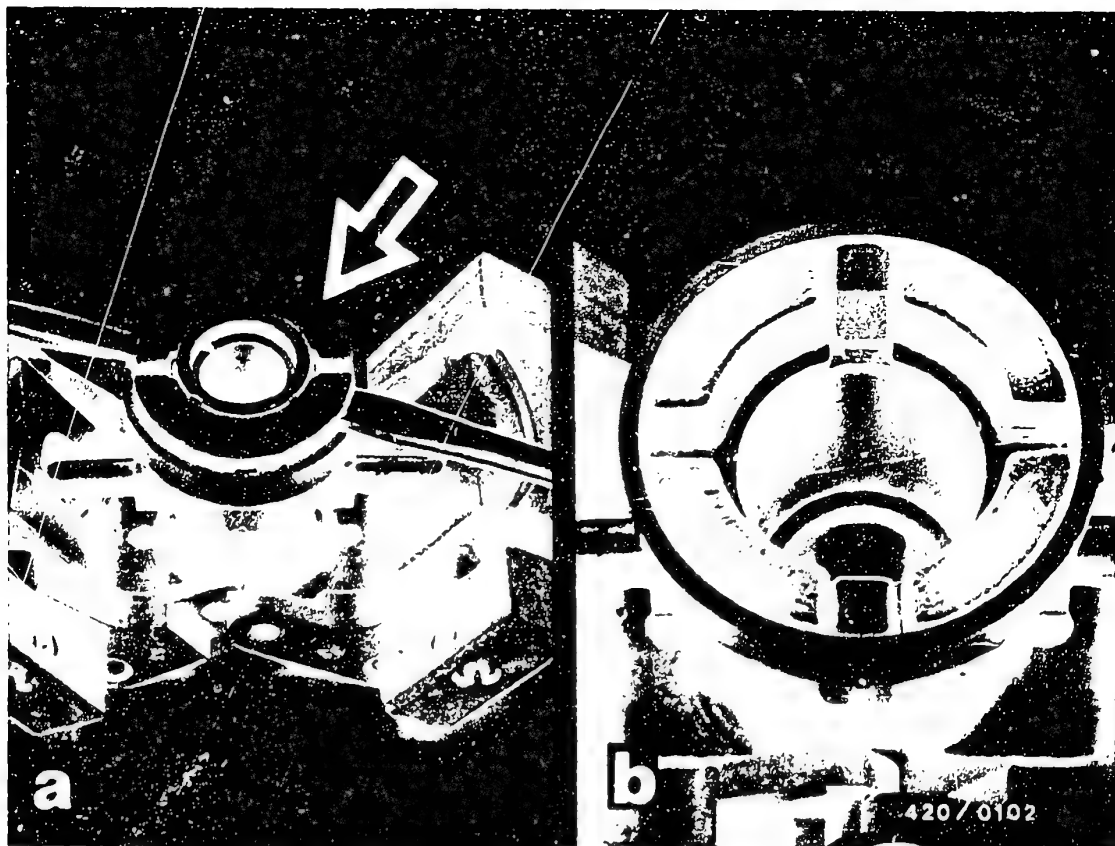
Once again check the loose play.

**C5**

Repairing the governor

RQ governors



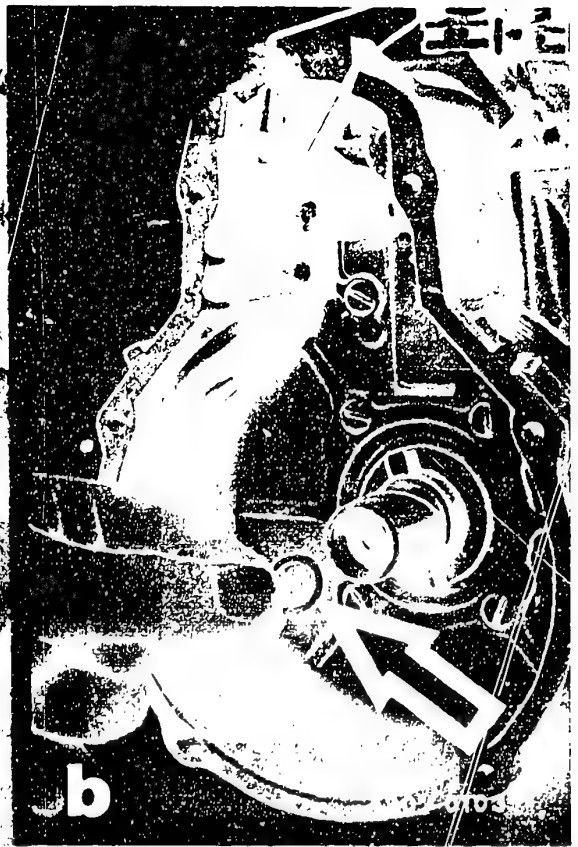
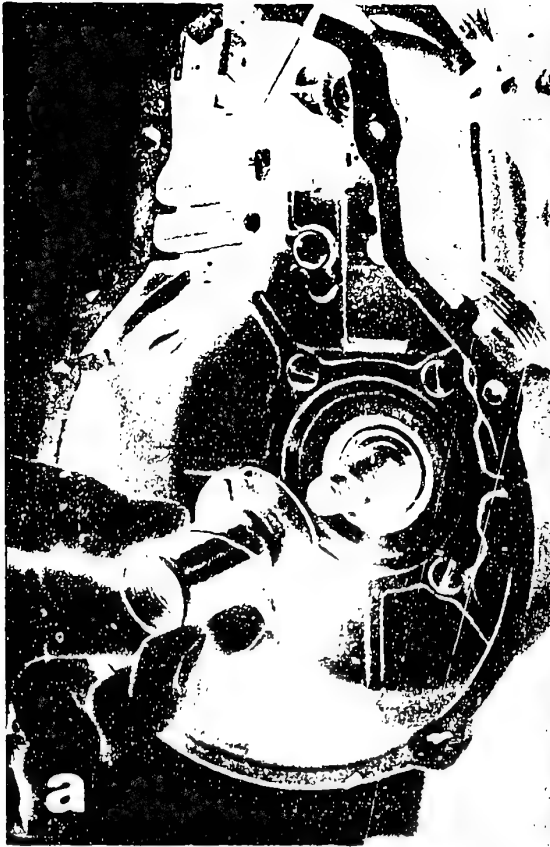


Unscrew locking sleeves KDEP 1586.  
Remove shims and spring seats from flyweights.  
Using screwdriver, lever driver (picture a-arrow)  
evenly out of governor assembly.  
Remove rubber buffers (picture b).

**C6**

Repairing the governor  
RQ governors





To evaluate the longitudinal play of the governor assembly, slide driver (picture a) onto cone of camshaft.

Insert existing shim (picture b-arrow).

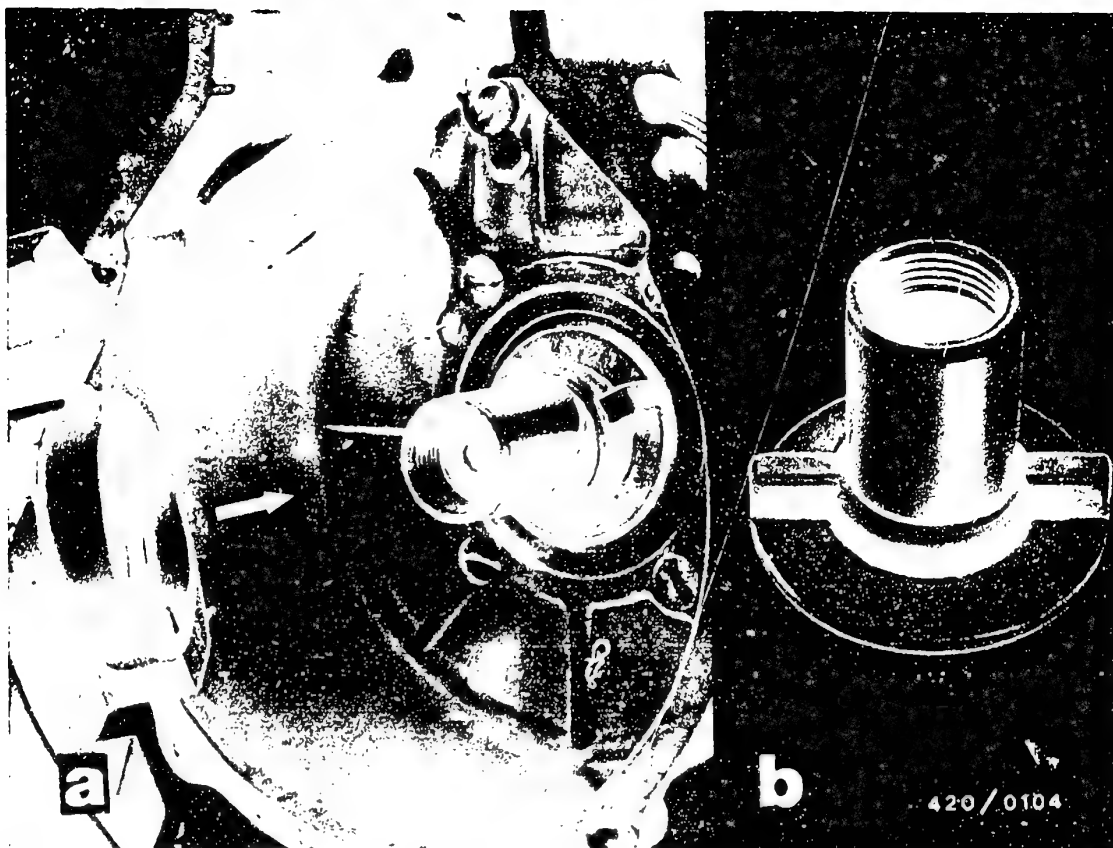
**C7**

Repairing the governor

RQ governors







Insert governor assembly without rubber buffers (picture a).

Screw on round nut and tighten governor assembly to the specified torque using socket wrench KDEP 2988.

Note:

Tightening torques

Driver with lubricating spiral (picture a): 50...60 Nm

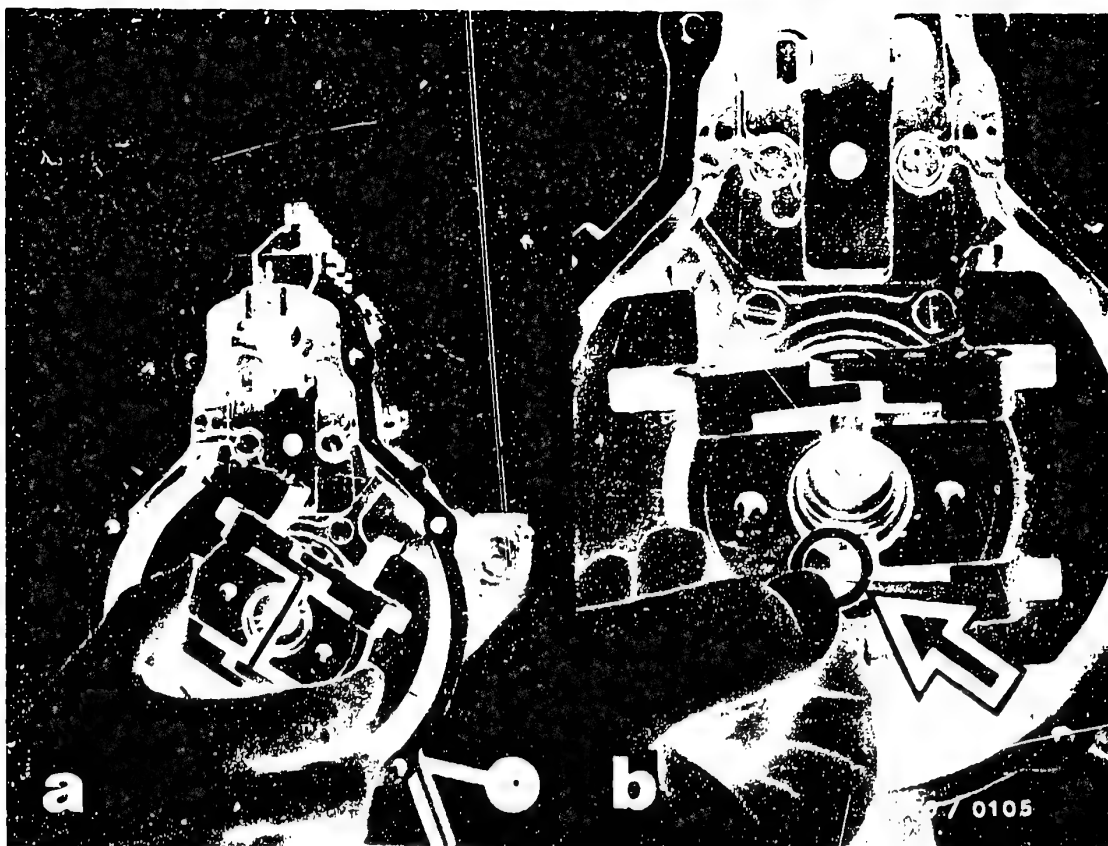
Driver without lubricating spiral (picture b): 65...75 Nm

**C8**

Repairing the governor

RQ governors





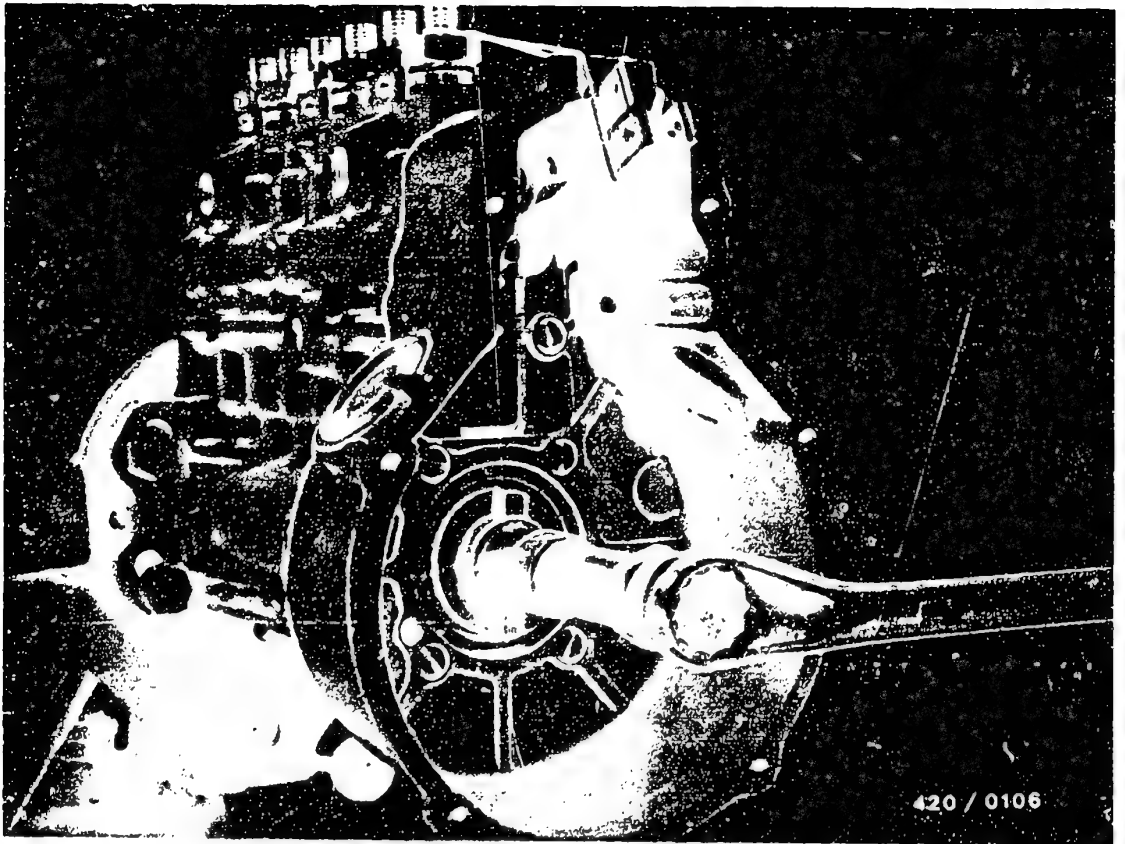
If the longitudinal play is correctly adjusted, it must be possible to turn the governor assembly with resistance, but without it sticking (picture a).

If, on the other hand, the governor assembly is too stiff or too easy to turn, correct the longitudinal play by changing the shim (picture b-arrow).

Note:

Provisionally insert the coupling pin into the governor assembly so that the flyweights do not brush against the governor housing when evaluating the longitudinal play.





After adjusting the longitudinal play, remove the governor assembly again.

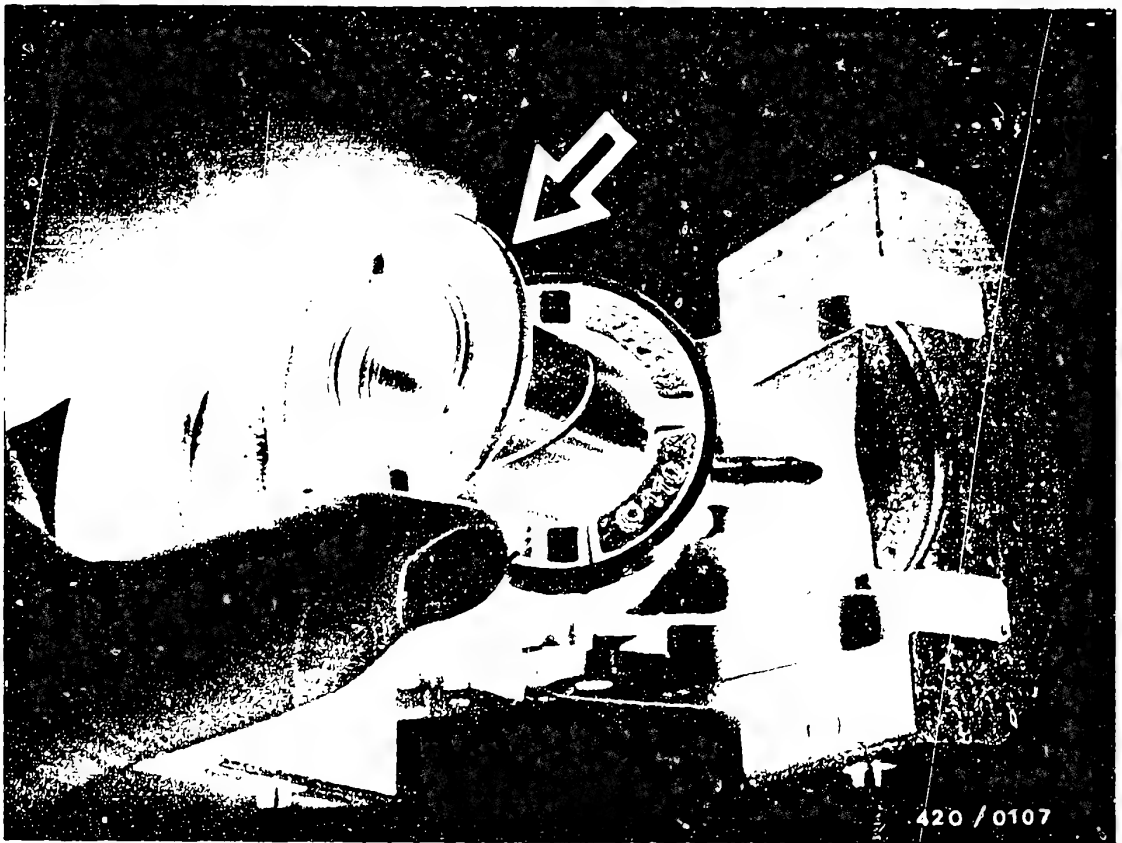
Using puller KDEP 2886, loosen driver from camshaft.

**C10**

Repairing the governor

RQ governors



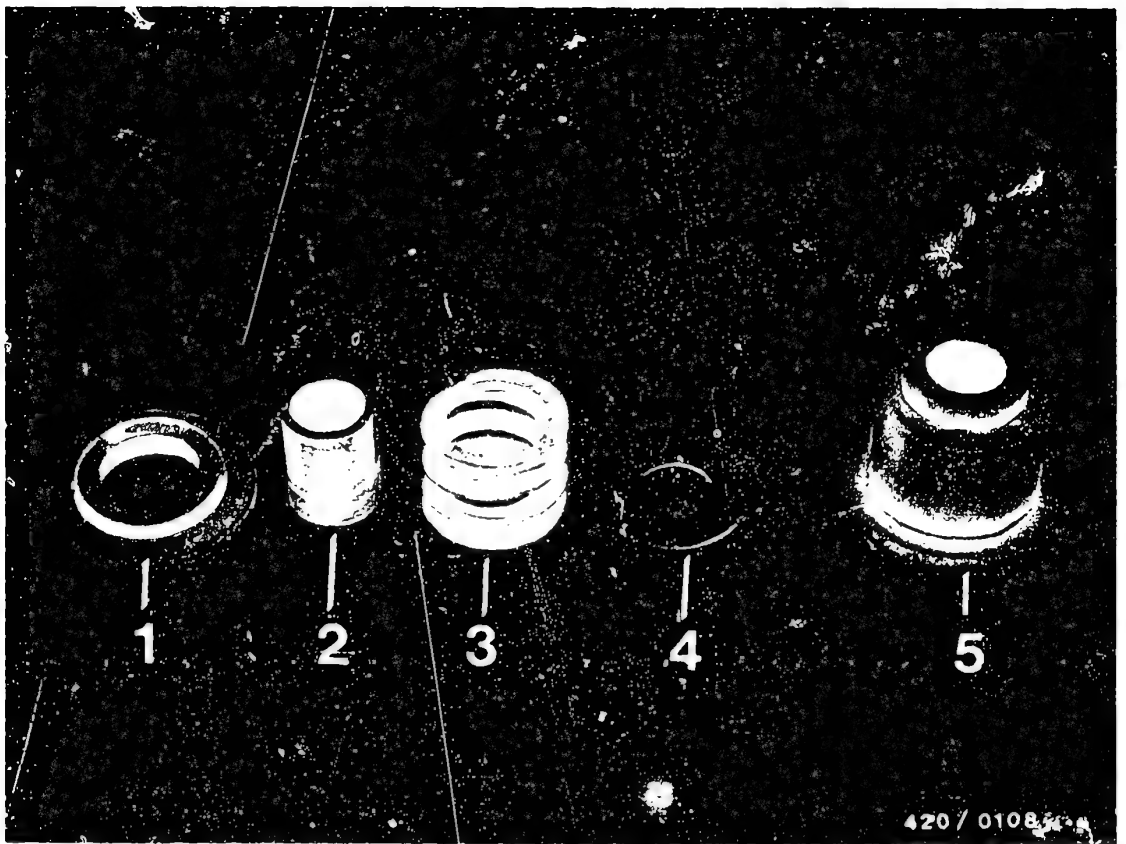


Insert new rubber buffers with grease into governor housing and then press in the driver (arrow).

**C11**

Repairing the governor  
RQ governors





### Adjusting the torque control

- |                        |                     |
|------------------------|---------------------|
| 1 = Spring seat        | 4 = Shim            |
| 2 = Spacer sleeve      | 5 = Spring retainer |
| 3 = Compression spring |                     |

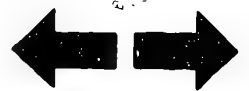
In case of governor versions with torque control, adjust the torque-control travel (a) by shims.

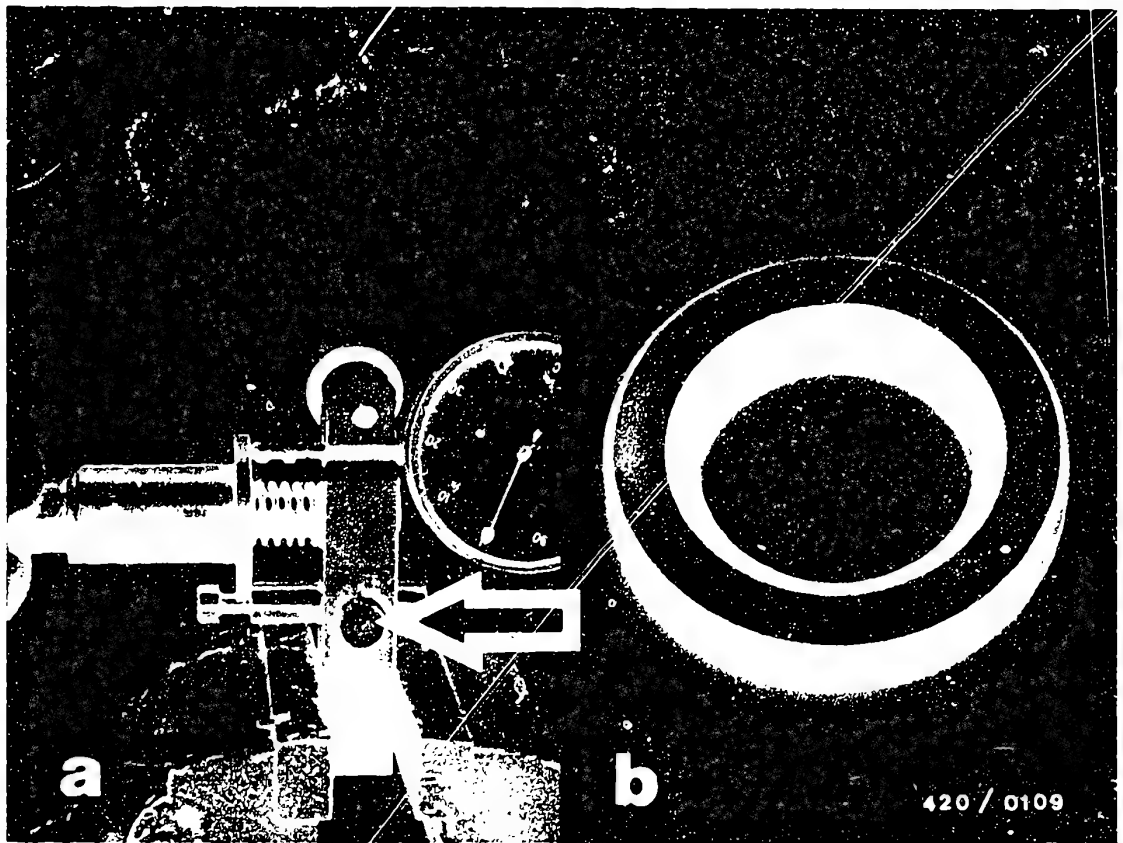
See the respective test-specification sheet for the torque-control travel (dimension a).

**C12**

Repairing the governor

RQ governors





Clamp torque-control measuring tool KDEP 2984 in vise. Insert dial indicator and clamp (picture a).

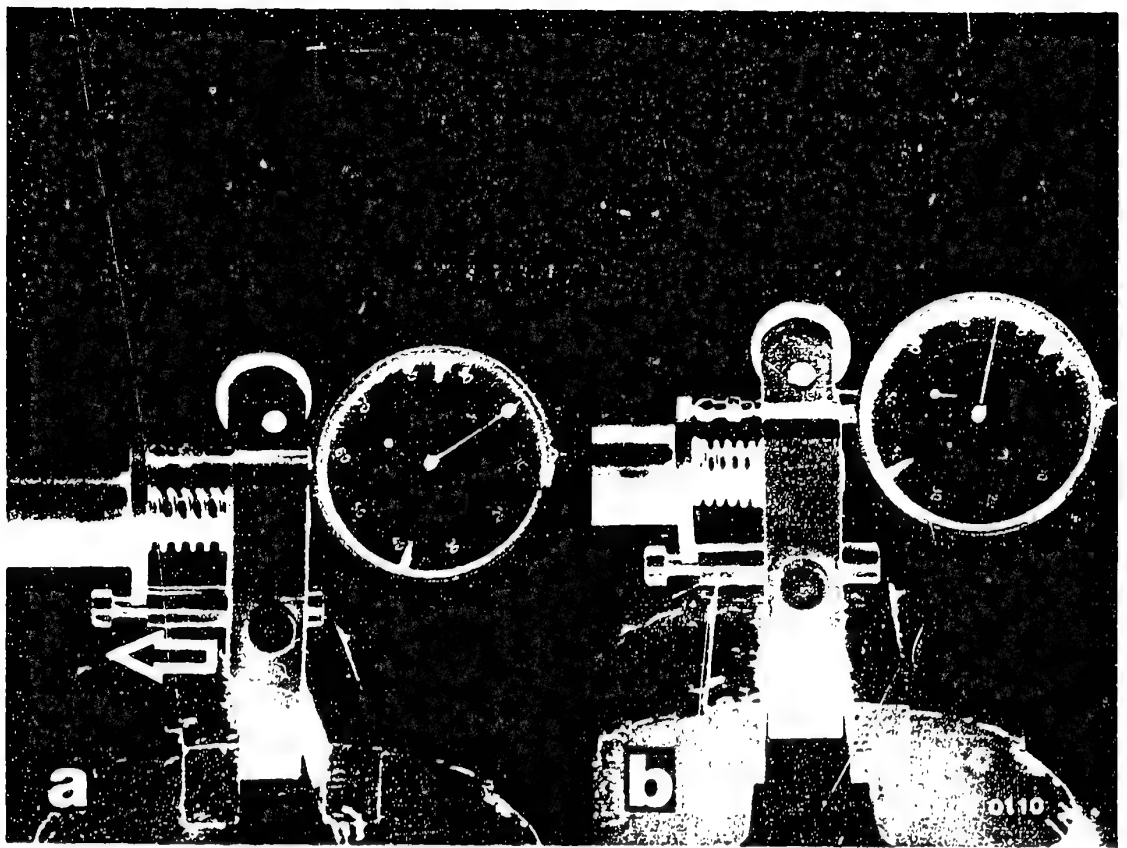
In this sequence, slide shim (picture b), spacer sleeve, spring seat and spring retainer onto pin of measuring tool.

Loosen clamping screw (picture a - arrow).

Note:

Check and adjust torque-control travel "a" without compression spring.





Press on spring retainer until it comes up against the measuring tool.

Press stop pin against the edge of the measuring socket (picture a - arrow) and clamp.

Set dial indicator to "0" (picture a).

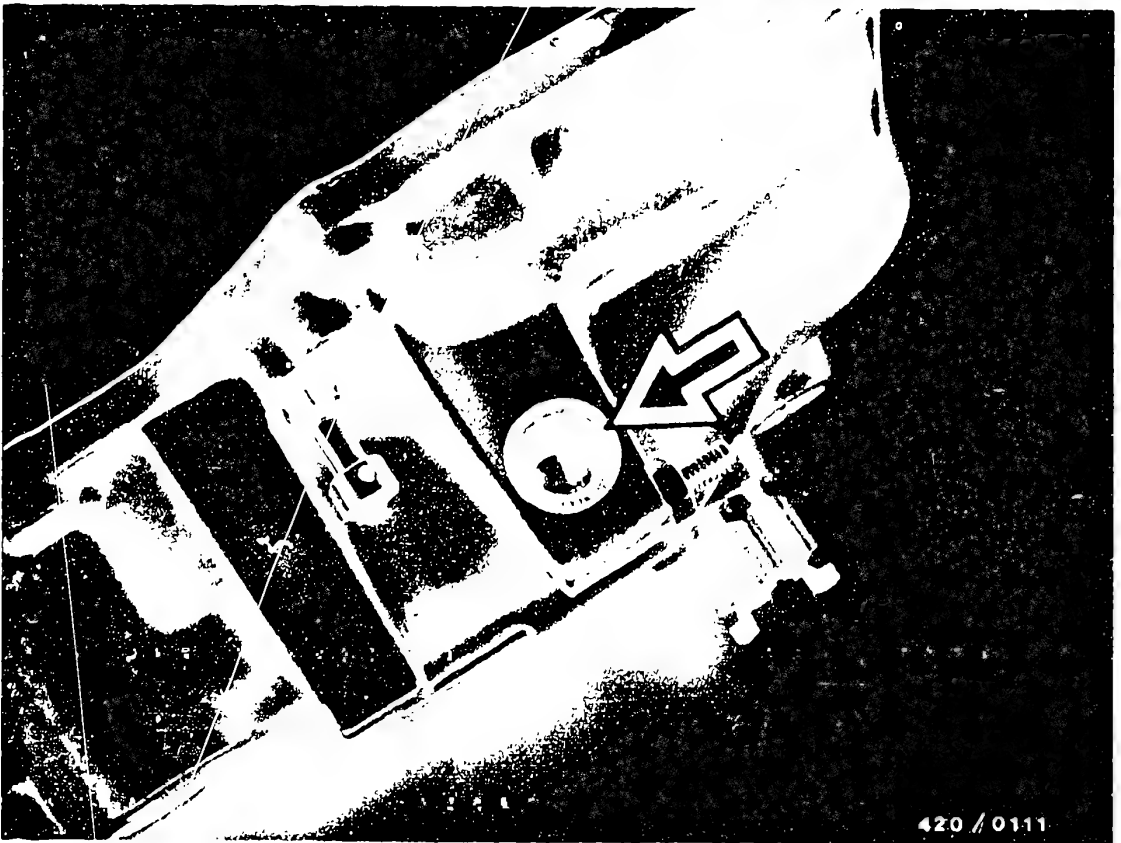
Remove spring retainer and slip shims onto pin of measuring tool until total thickness yields torque-control travel "a".

Slide on spring retainer and check torque-control travel (picture b). Repeat procedure for measuring the second torque-control travel.

Note:

Pointer of dial indicator deflects to the left. Take reading from red figures.





The following operations are to be performed only in case of:

- Worn bearing bushings of control-lever shaft
- Control-lever shaft worn or sticking
- Damage to guide block.

Note:

Always replace radial-lip-type oil seals of control-lever shaft (arrow).

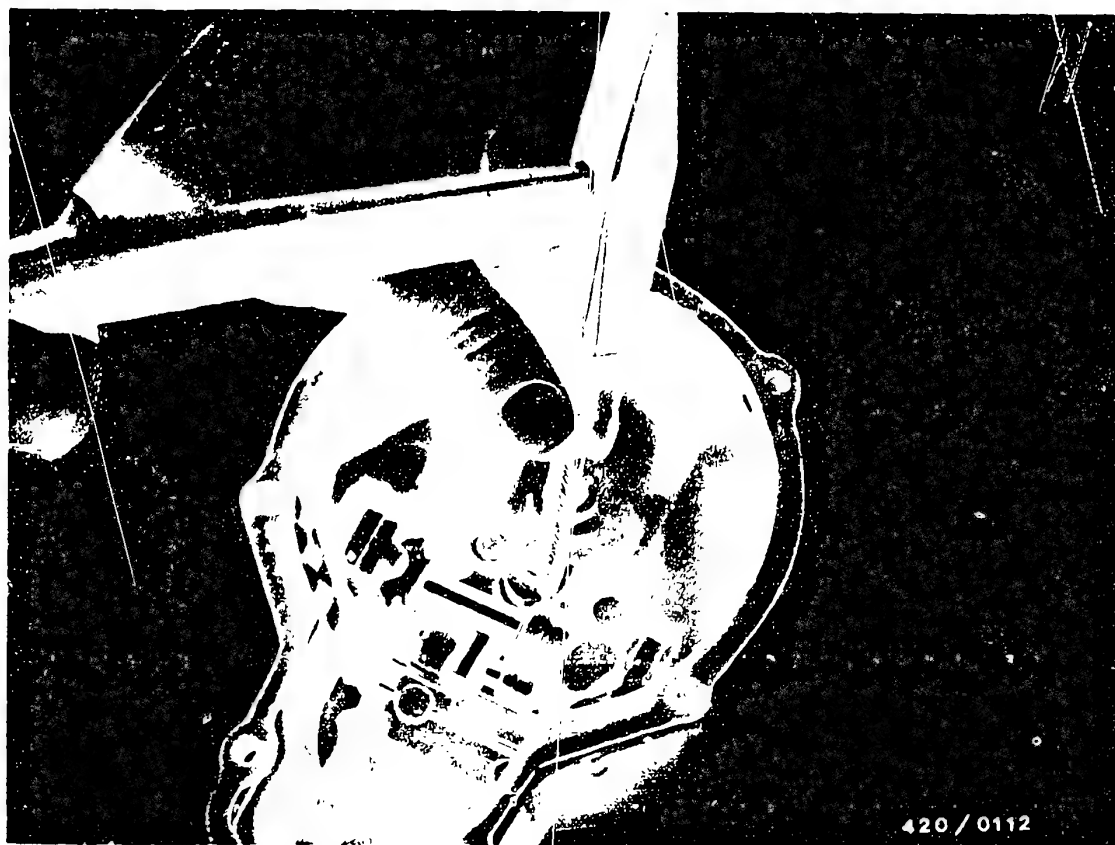
**C15**

Repairing the governor

RQ governors







Position fulcrum lever so that the knocking-out side of the paper pins is pointing upward.

Knock out taper pins (as can be seen in picture).

Pull setting shaft out of governor cover.

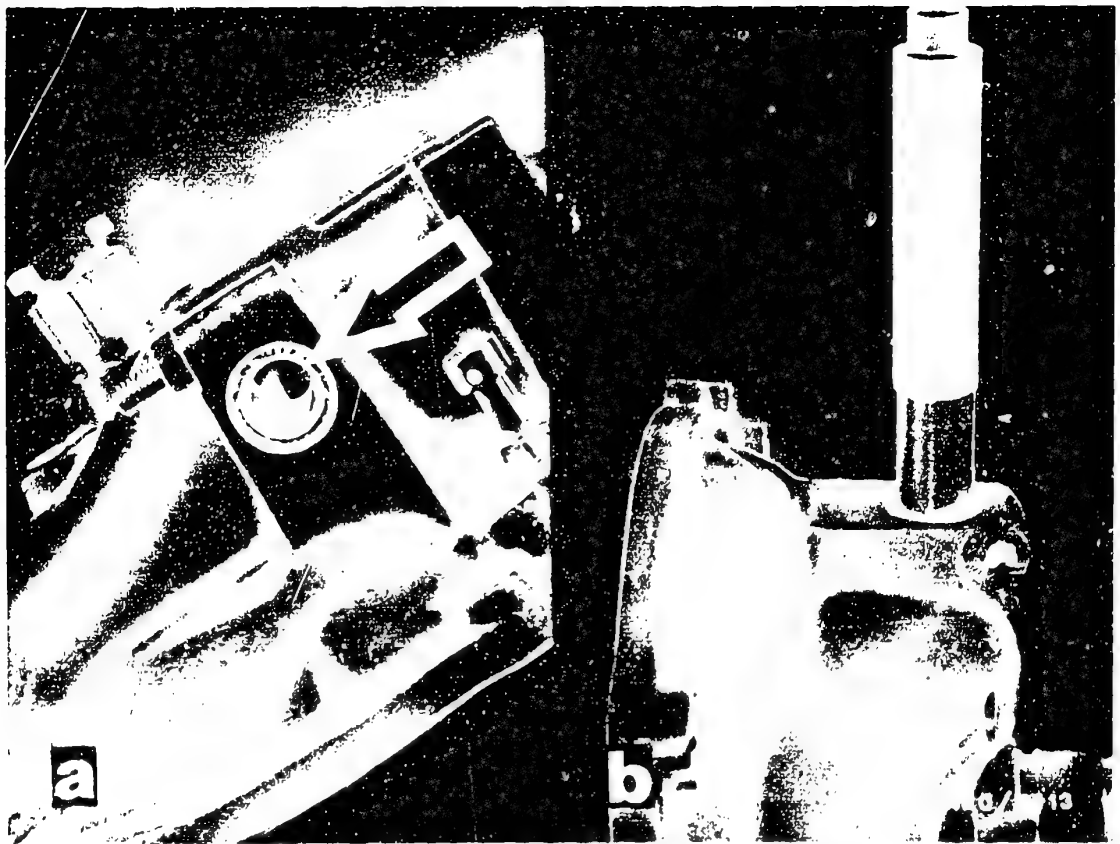
Remove control lever.

**C16**

Repairing the governor

RQ governors





Remove radial-lip-type oil seals (picture a-arrow).

Using mandrel KDEP 1584, press out bearing bushings (picture b).

When pressing out, put support under governor cover on the opposite side.

Press in new bearing bushings, also using mandrel KDEP 1584.

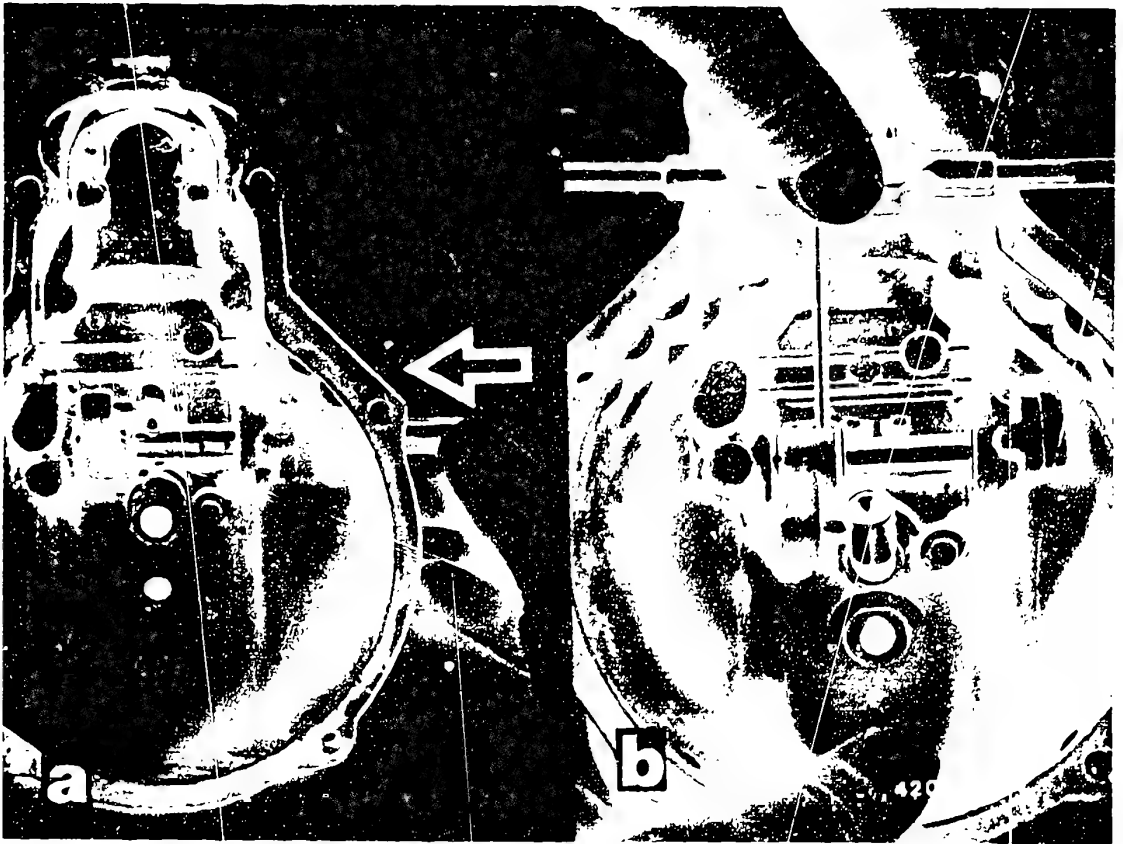
Insert radial-lip-type oil seals.

**C17**

Repairing the governor

RQ governors





Introduce setting shaft on one side in governor cover (picture a).

Slide on linkage lever with intermediate plates and then slide setting shaft through entirely.

Join linkage lever to setting shaft by knocking in the taper pins.

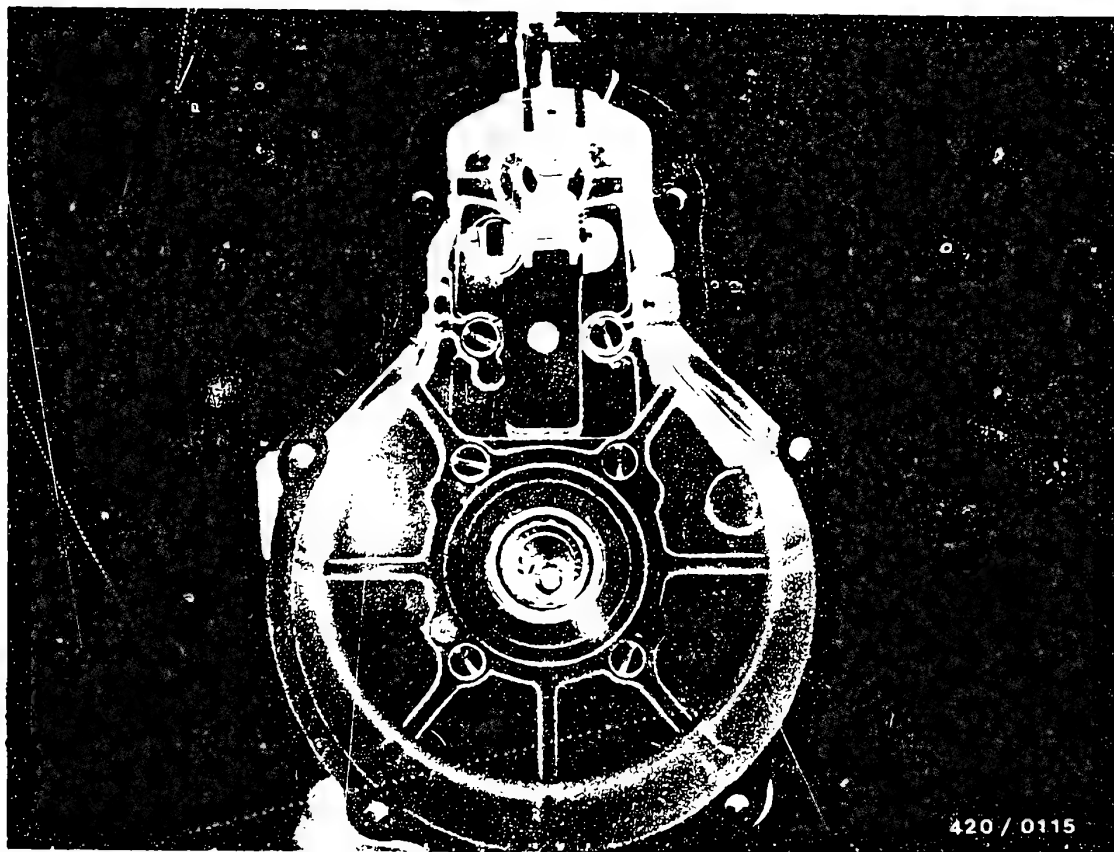
Check freedom of movement of setting shaft.

Mount control lever.

Note:

If using a new setting shaft, ream the locating holes with reamer (picture b).





### 9. ASSEMBLING RQ GOVERNORS

In the following operations, use only components which have been cleaned and which are not worn or damaged.

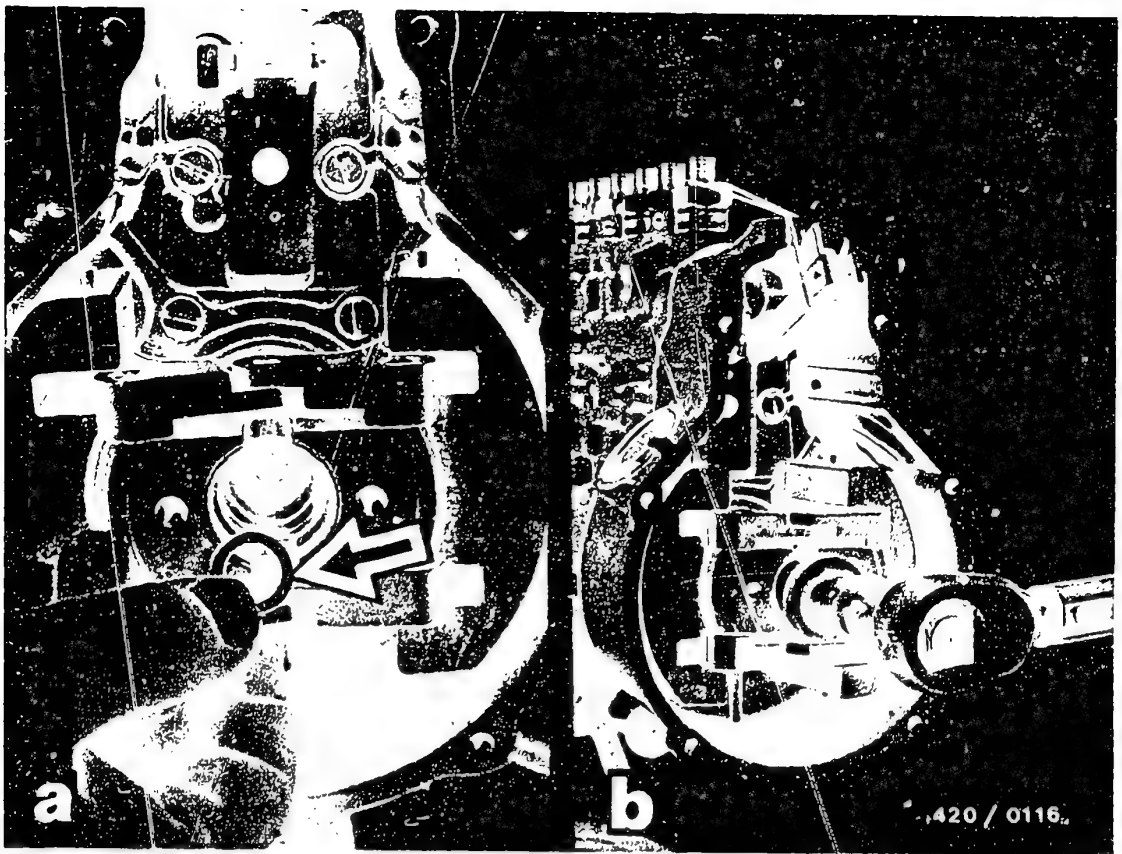
Replace flat flange gaskets and tab washers.

**D1**

Assembling the governor

RQ governors





Slide governor assembly onto camshaft cone.

Insert appropriate longitudinal play shim (picture a-arrow).

Screw on round nut and, using socket wrench KDEP 2988, tighten governor assembly to the specified torque (picture b).

Note:

Tightening torques:

Driver with lubricating spiral: 50...60 Nm

Driver without lubricating spiral: 65...75 Nm

**D2**

Assembling the governor

RQ governors



After tightening, check freedom of movement of governor assembly. To do this, lock flyweights with screwdriver and turn camshaft.

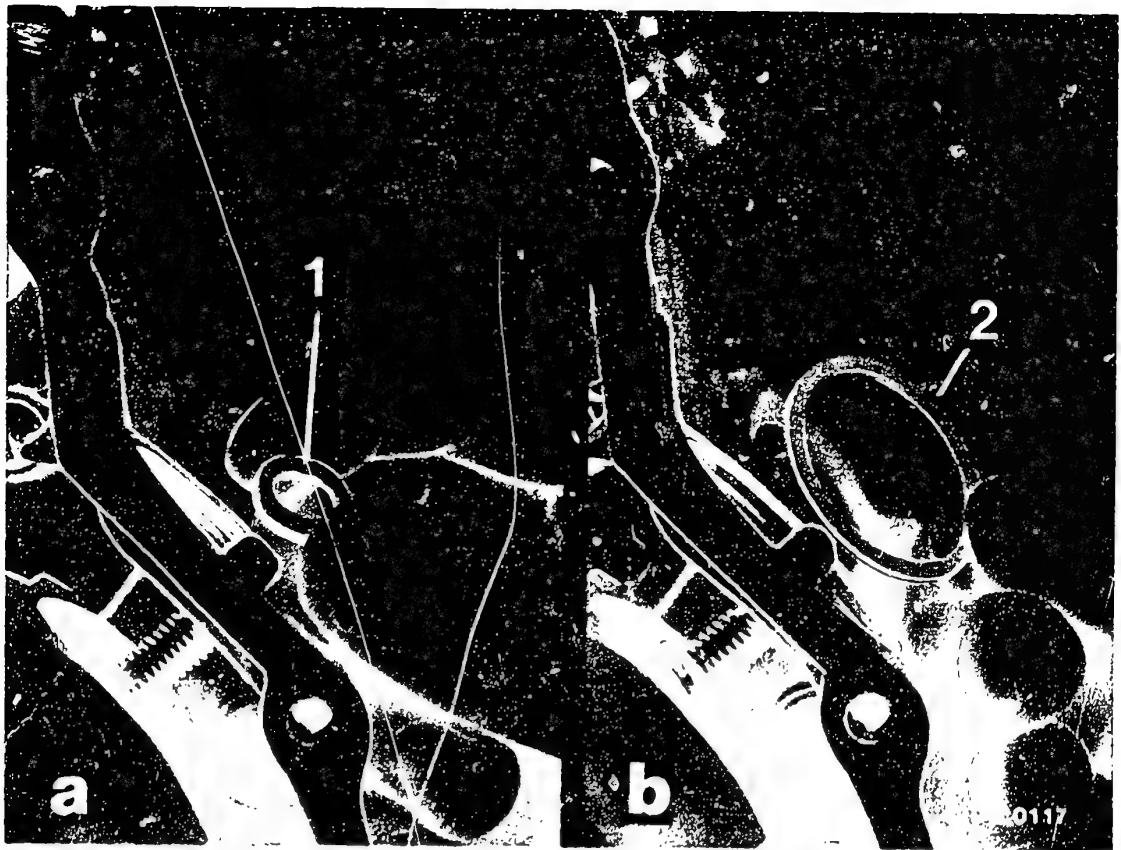
If camshaft cannot be turned, repeat adjustment of longitudinal play of governor assembly.

**D3**

Assembling the governor

RQ governors





To finish off the flyweight assemblies, carry out the operations described below.

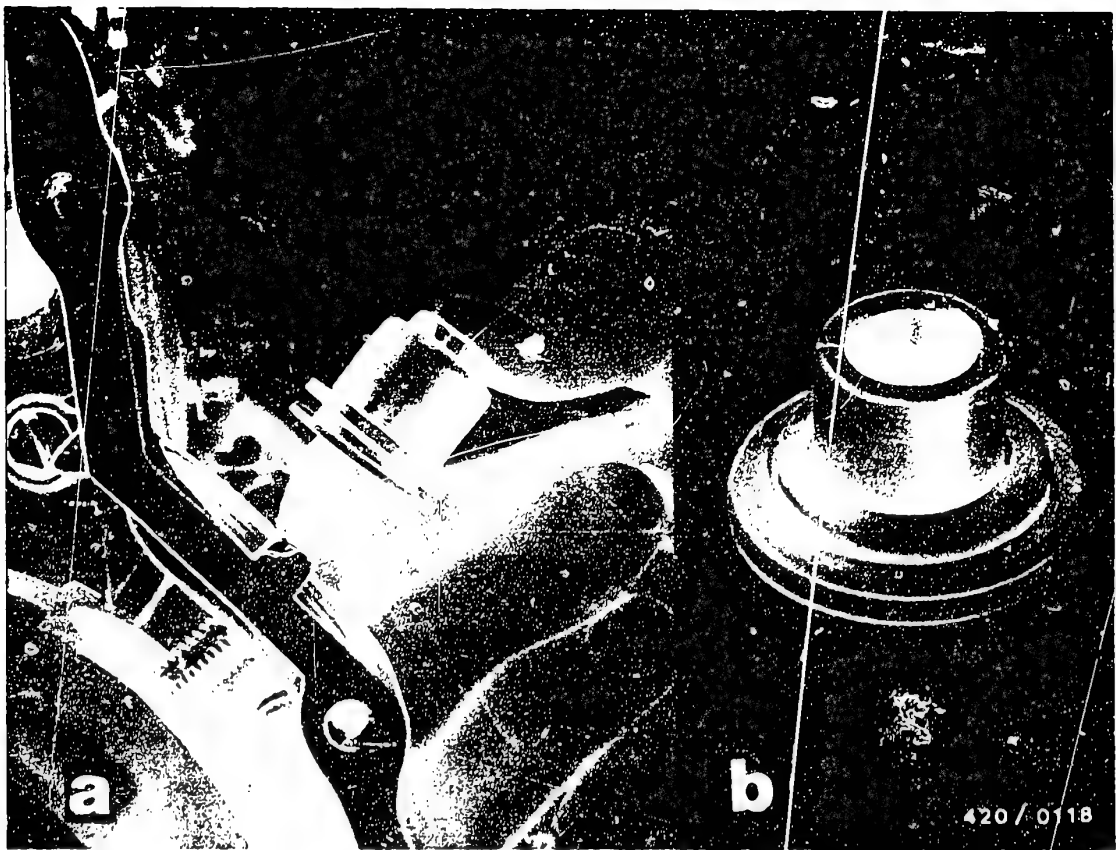
Insert shim (1), with chamfer toward bottom of flyweights, as well as plain washers (2), if applicable.

**D4**

Assembling the governor

RQ governors





Insert the torque-control assembly (picture a).

In versions of governor without torque control, install spring seat (picture b).

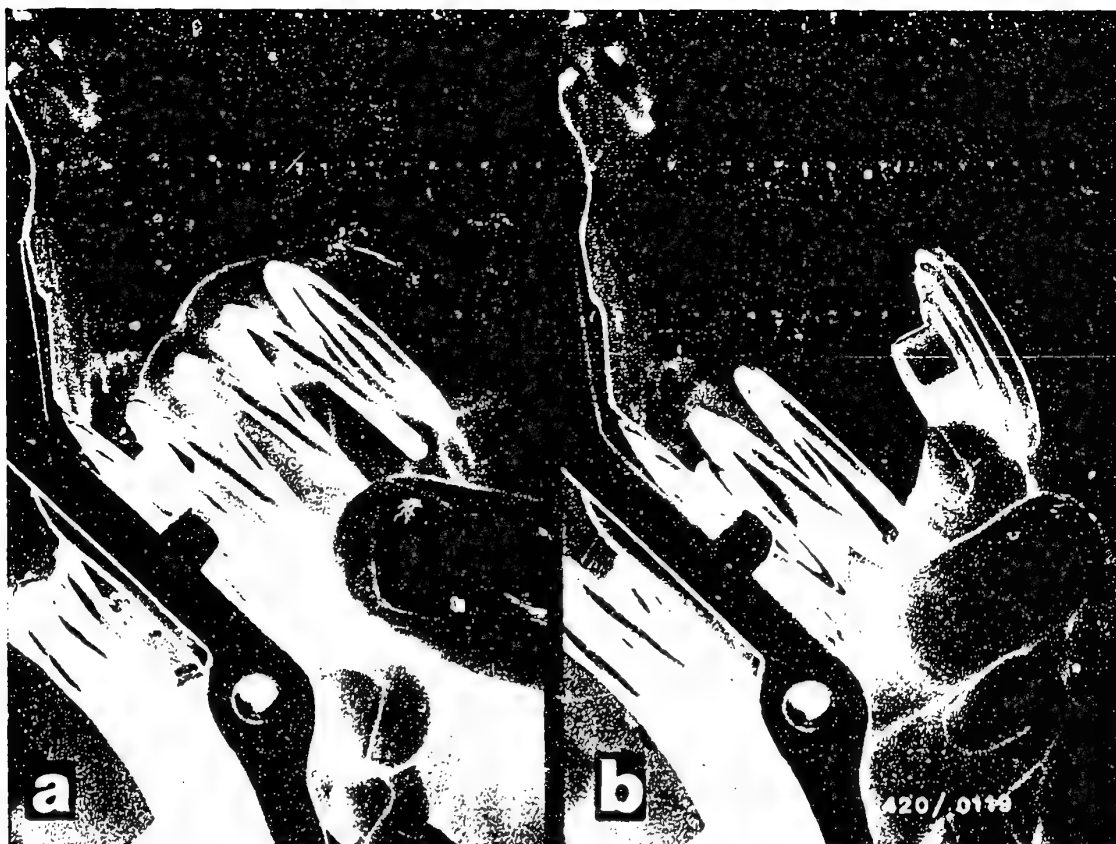
**D5**

Assembling the governor

RQ governors







Insert governor springs in flyweight assembly (picture a).

Put on spring seat (picture b).

Note:

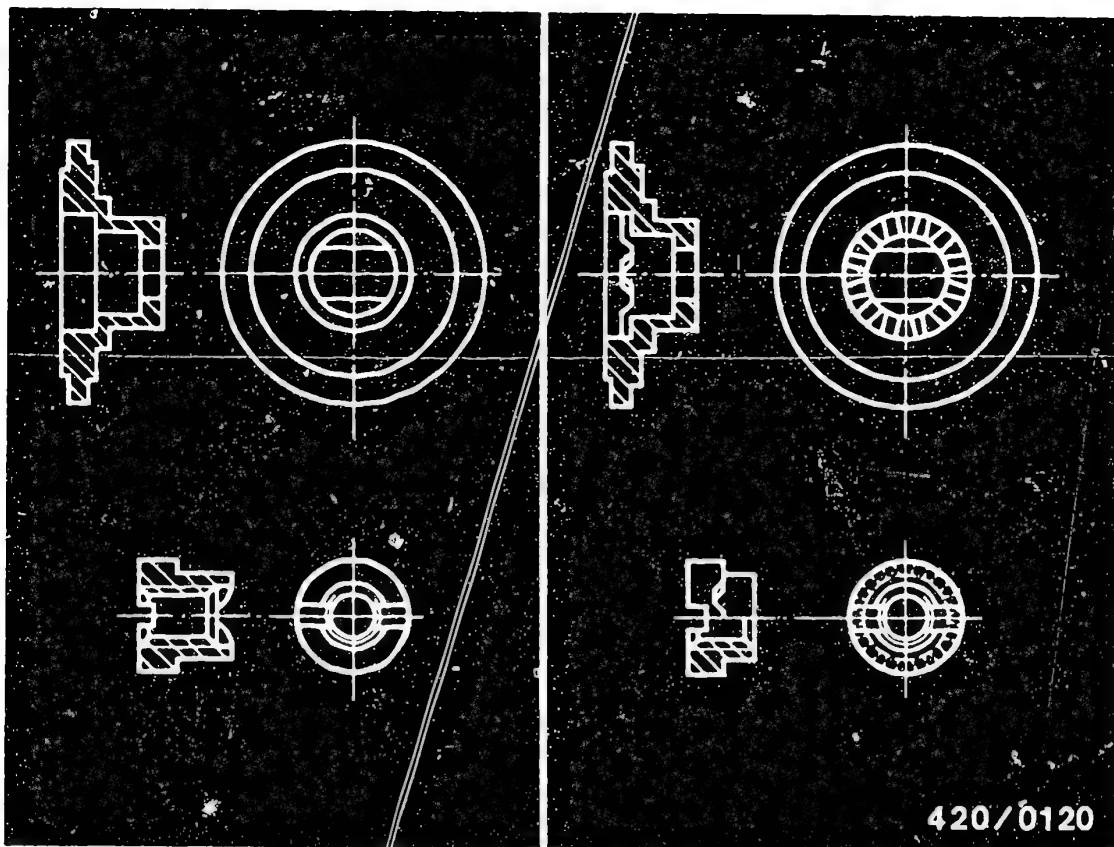
Number of governor springs depends on version of governor.

**D6**

Assembling the governor

RQ governors





	<u>Old</u>	<u>New</u>
Spring seat	1 420 520 002	2 420 520 001
Spring seat	1 420 520 003	2 420 520 002
Round nut	1 423 345 020	2 423 345 005

To limit the play and for increased accuracy of adjustment, the upper spring seat and the round nut have been provided with closely stepped notches.

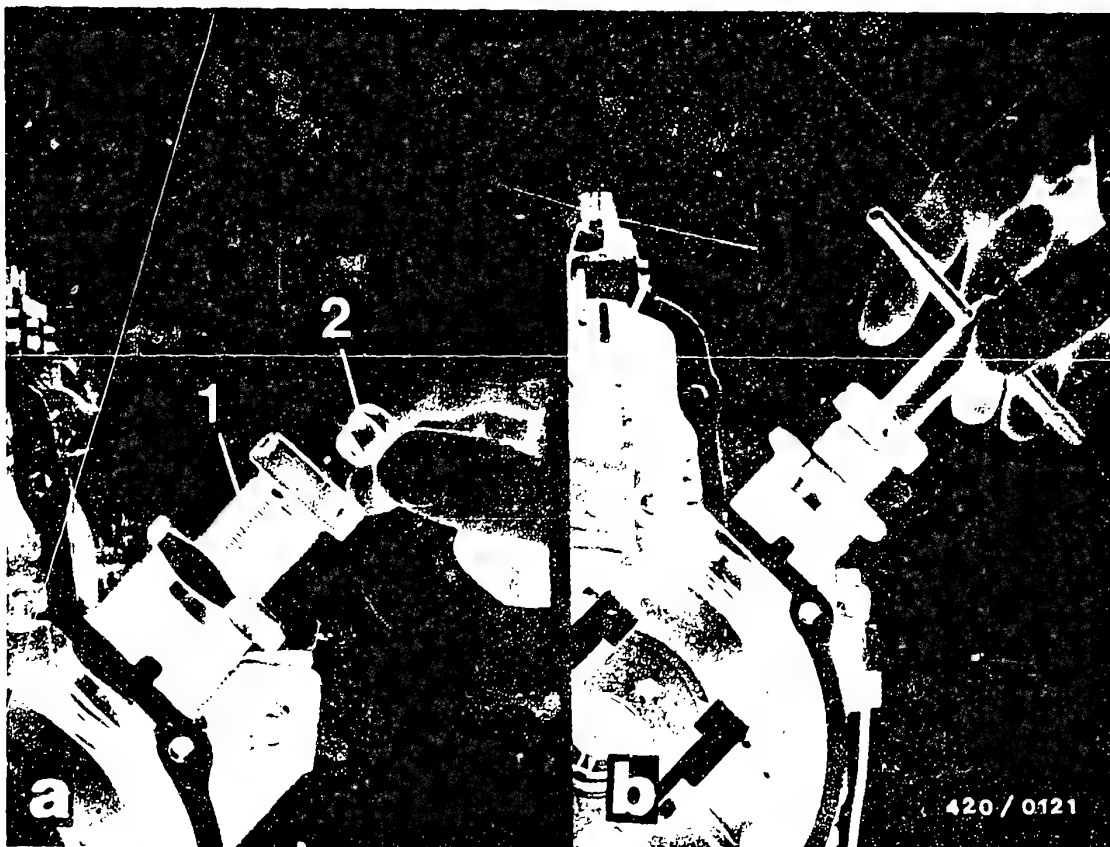
Old and new versions must not be installed together.

Spring seat and round nut must always be of the same version.

**D7**

Assembling the governor  
RQ governors





Screw clamping fixture KDEP 2894 into governor housing and compress governor springs.

When screwing in the clamping sleeve (picture a-1), make sure that the guide of the spring seat aligns with the ground sides of the threaded pin.

If not in alignment, correctly adjust spring seats using the pin-type wrench of the clamping fixture.

Using pin-type socket wrench KDEP 2989 (picture b), screw round nut (picture a-2) onto threaded pin until spring seat latches.

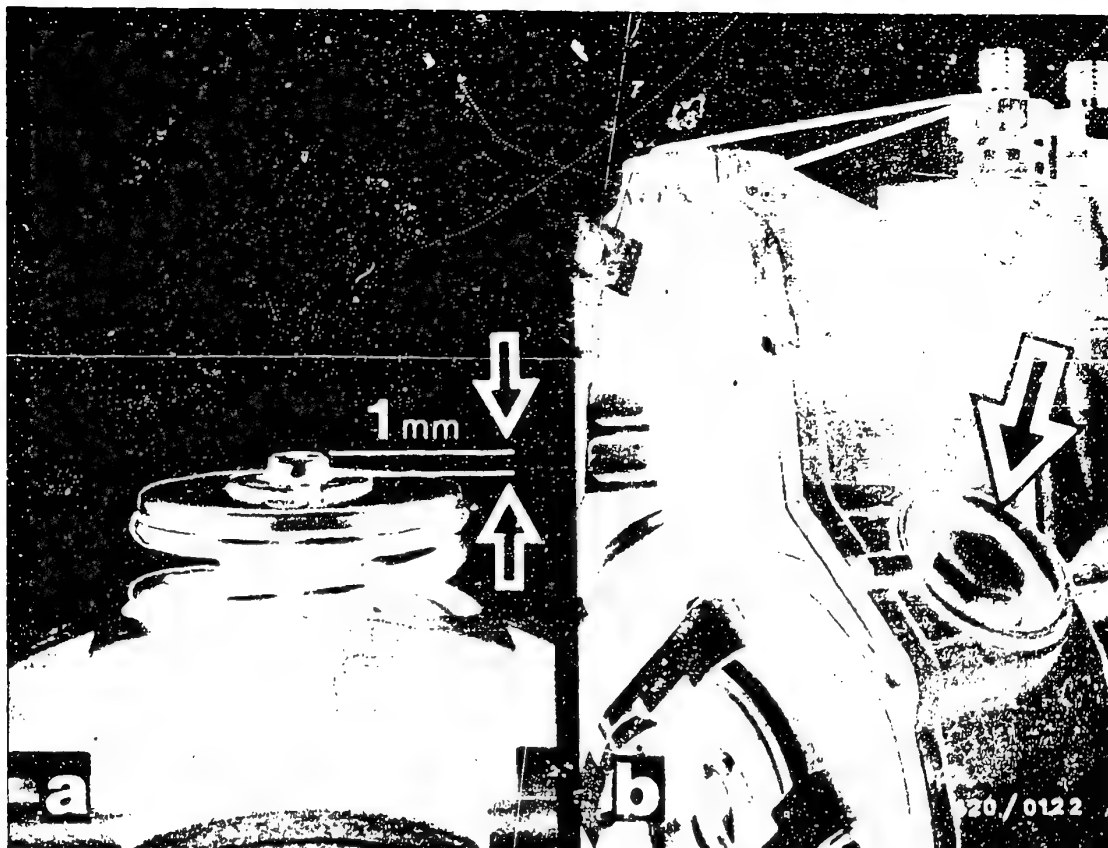
Unscrew clamping fixture KDEP 2894.

**D8**

Assembling the governor

RQ governors





Check presetting dimension of 1 mm between threaded pin and round nut (picture a).

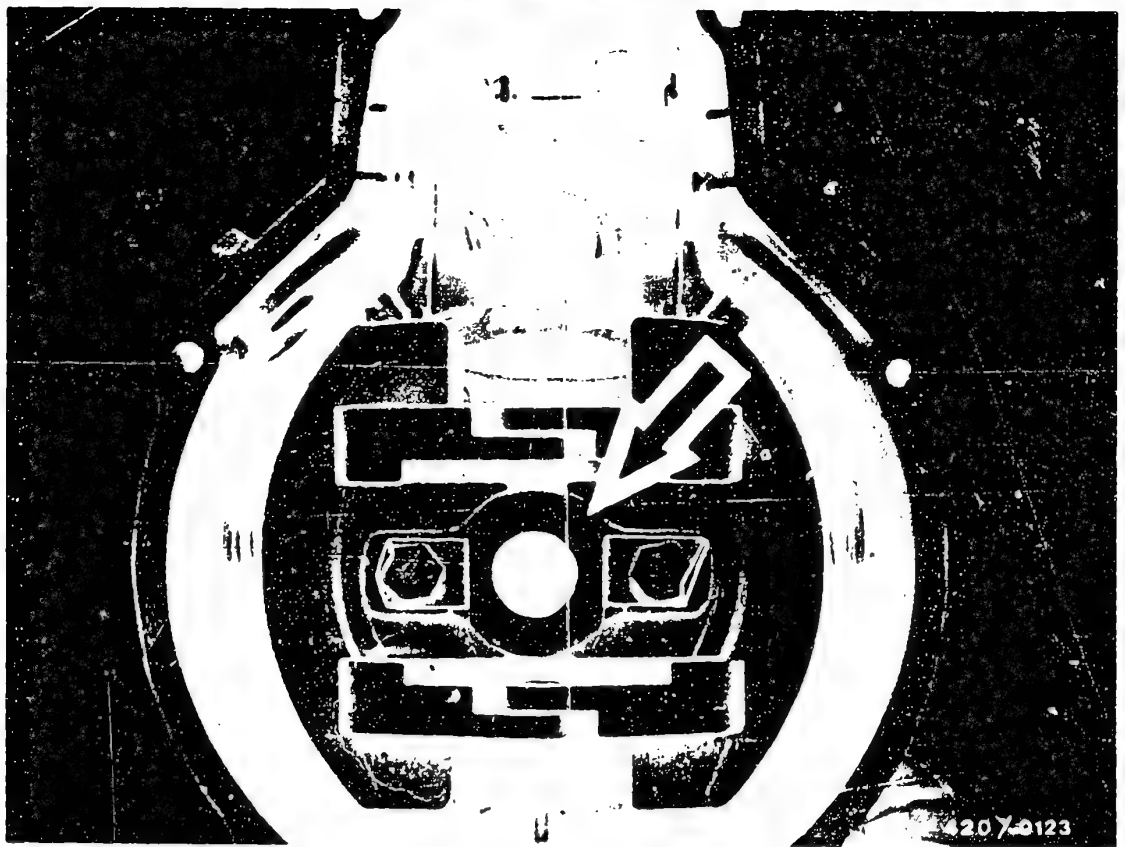
Screw screw plug (picture b-arrow) into governor housing and, if there is to be no subsequent setting on the injection-pump test bench, tighten to 30...40 Nm.

**D9**

Assembling the governor

RQ governors



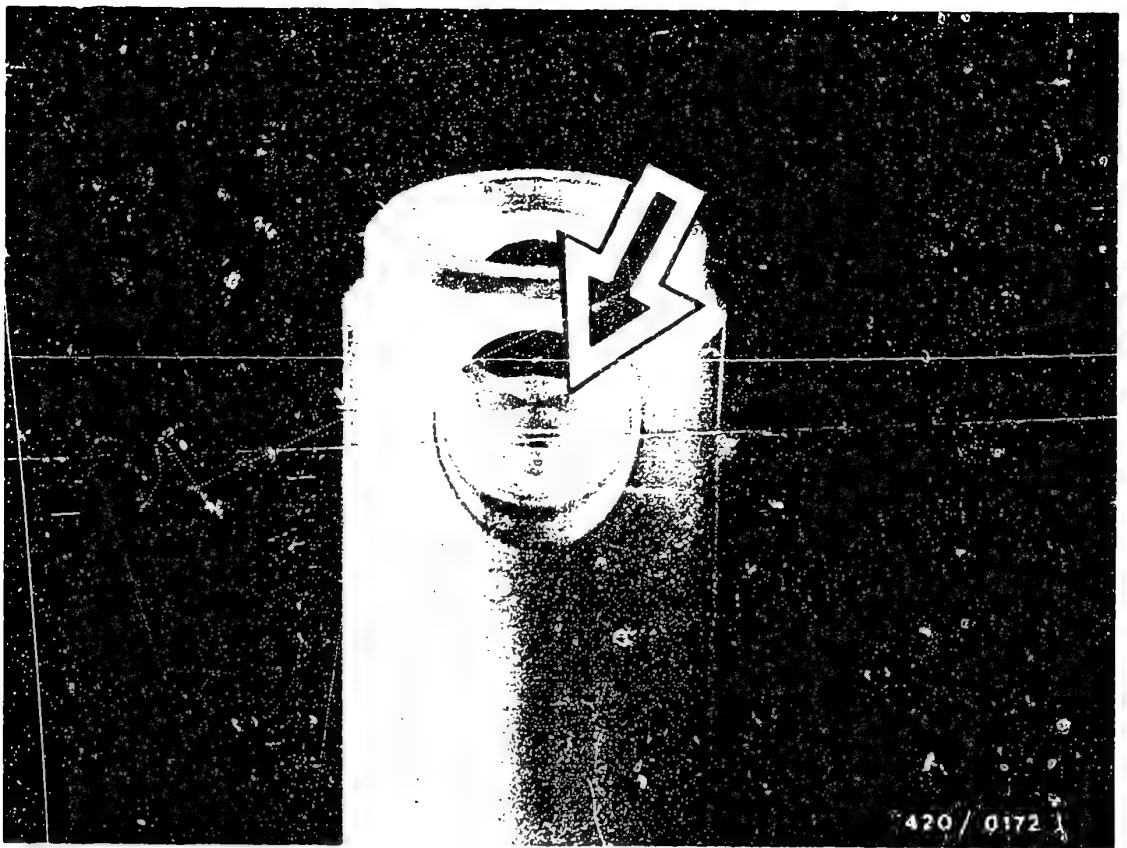


Insert guide bushing (arrow) in governor assembly.  
Tighten fastening screws to 5...8 Nm and secure against  
coming loose by bending over the tab washers.

**D 10**

Assembling the governor  
RQ governors





Note:

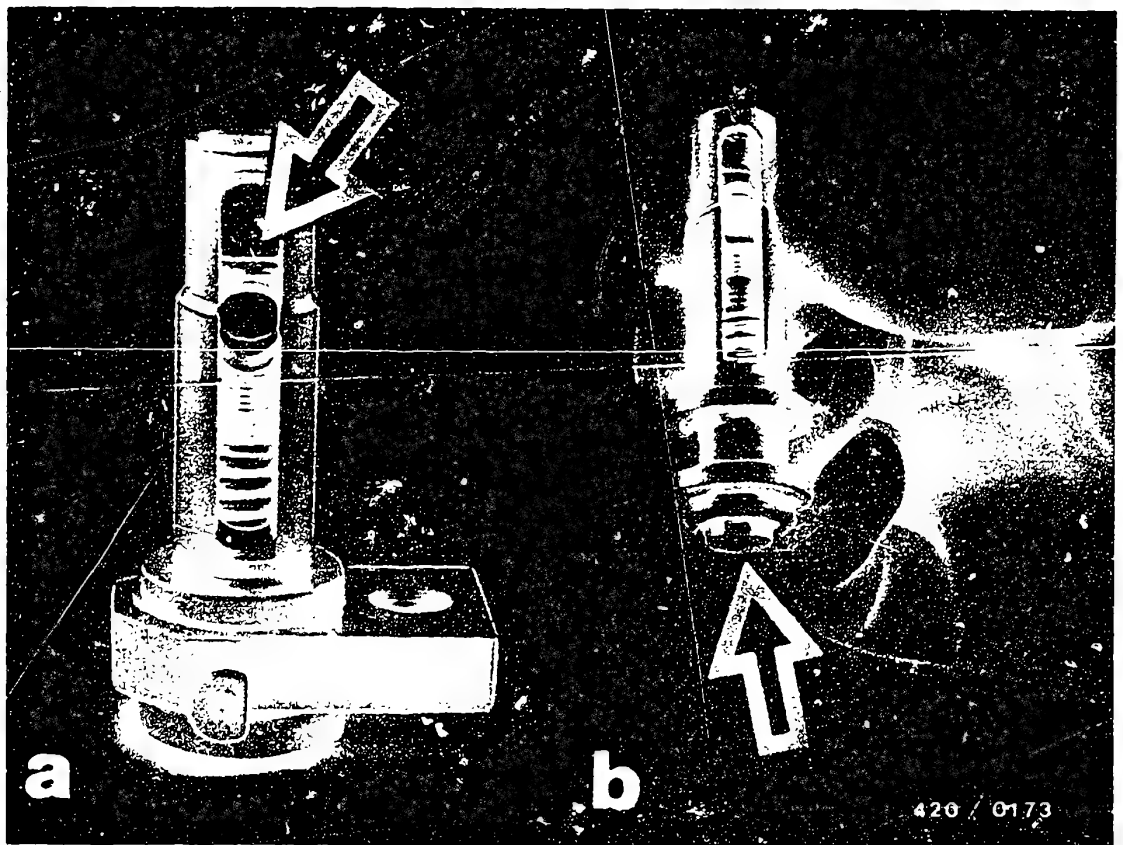
In case of versions of bearing pin with travel memory (arrow), see respective test-specification sheet under "remarks" for information on setting full load.

**D11**

Assembling the governor

RQ governors





Note:

Before installing a spring-loaded bearing pin, check adjusting screw (picture a-arrow) for zero play.

Play can be detected by pressing on the screw sleeve (picture b-arrow) or by checking for noise (shaking the bearing pin).

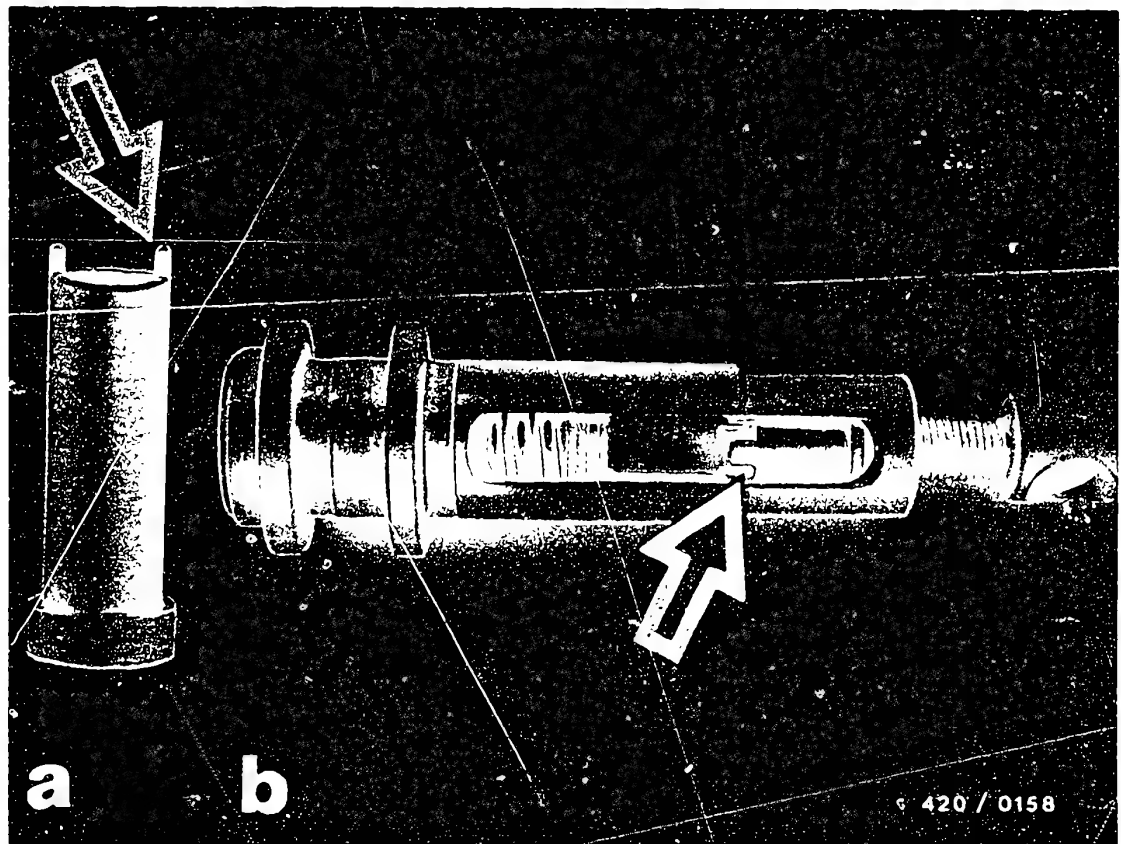
If there is play, hold bearing pin slightly slanted and unscrew adjusting screw until the screw sleeve leaves the bearing pin.

**D12**

Assembling the governor

RQ governors





Slightly turn screw sleeve so that the spigots (picture a-arrow) engage other recesses in the slotted sleeve (picture b-arrow).

Screw adjusting screw into screw sleeve.

If necessary, repeat adjustment until there is no more play.

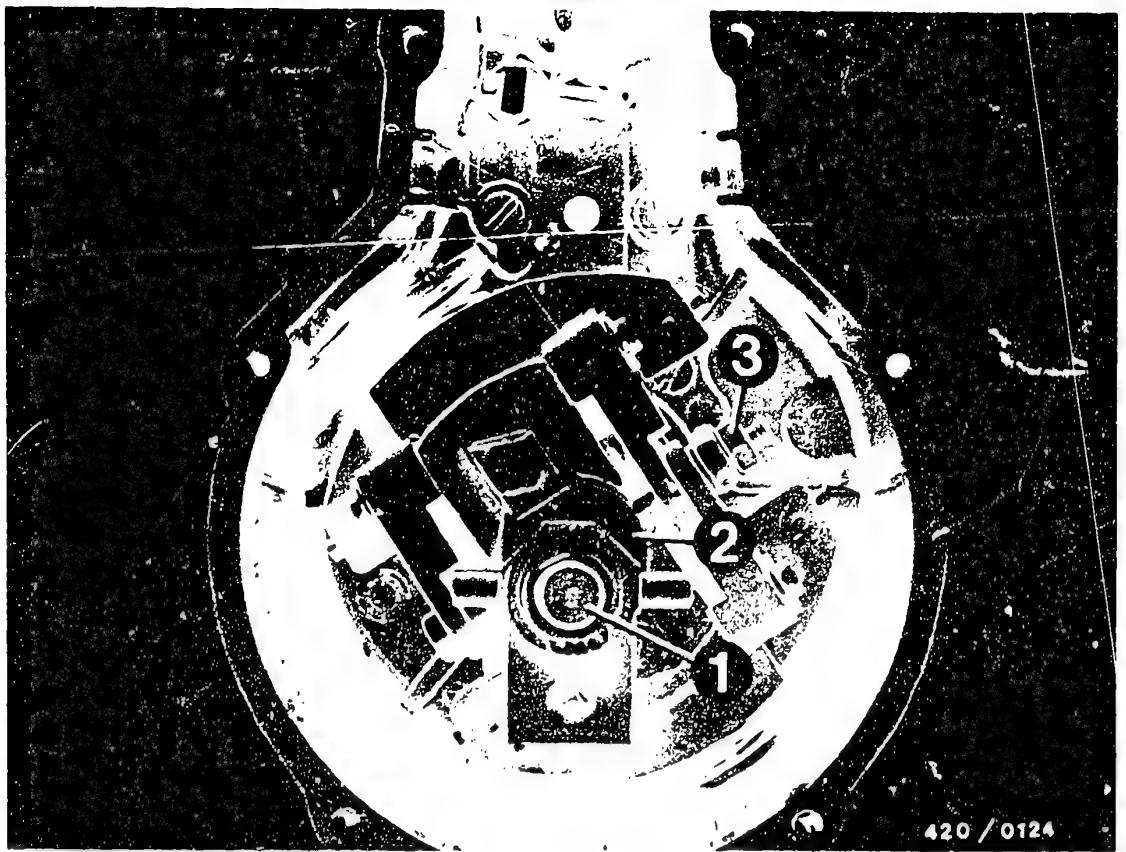
**D13**

Assembling the governor

RQ governors







### Adjusting the slider dimension

1 = Bearing pin    2 = Guide sleeve    3 = Coupling pin

Insert bearing pin into guide bushing.

Stick coupling pin through bell crank and bearing pin.

In this sequence, put on or screw on plain washer, hexagon nut, lock washer and lock nut. (Not in case of spring-loaded bearing pin.)

Adjust longitudinal play of coupling pin to 0.5...1.0 mm (while pressing outer bell cranks outward).

Tighten hexagon nuts against each other to 6...8 Nm

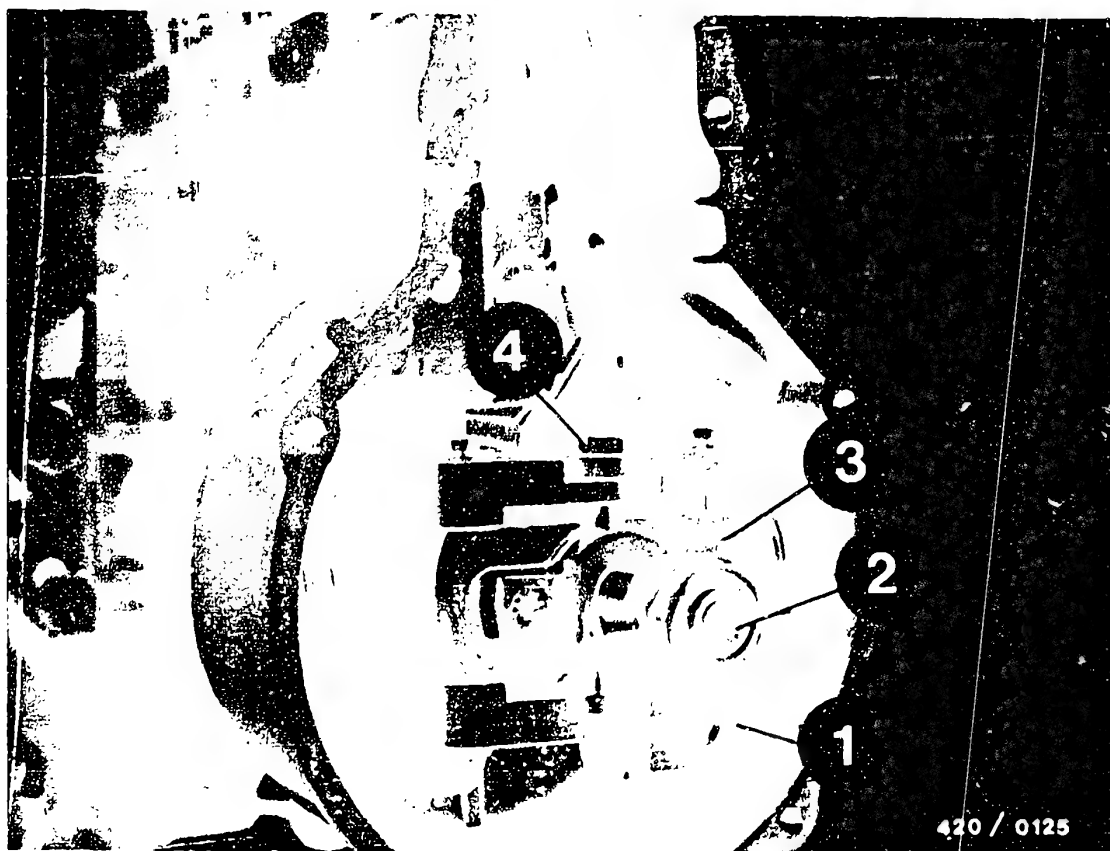
Bend lock washer over both hexagon nuts.

**D14**

Assembling the governor

RQ governors





420 / 0125

Adjusting the slider dimension in case of spring-loaded bearing pin

1 = Slider

3 = Guide bushing

2 = Bearing pin

4 = Coupling pin

Insert bearing pin into guide bushing and provisionally fix using coupling pin.

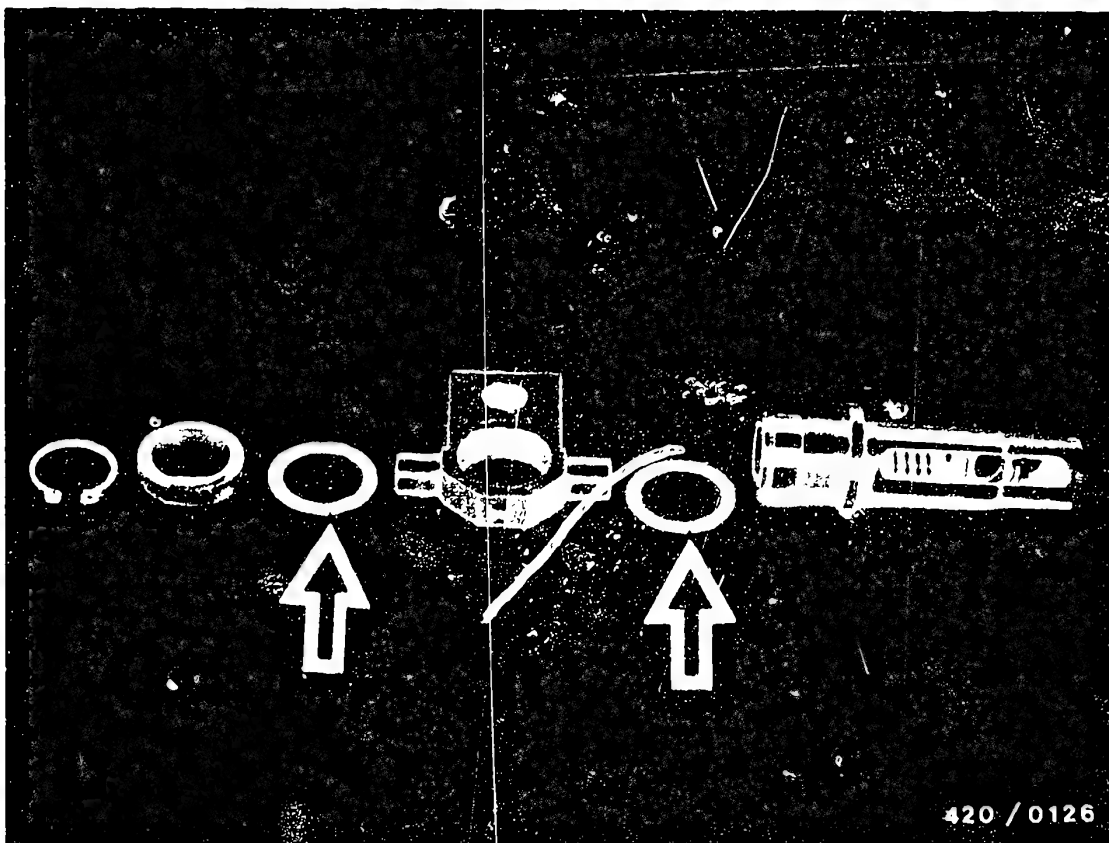
Check whether there is at least one shim on either side of the slider.

**D15**

Assembling the governor

RQ governors





In versions with spring-loaded bearing pin, adjust the slider play before checking the slider dimension.

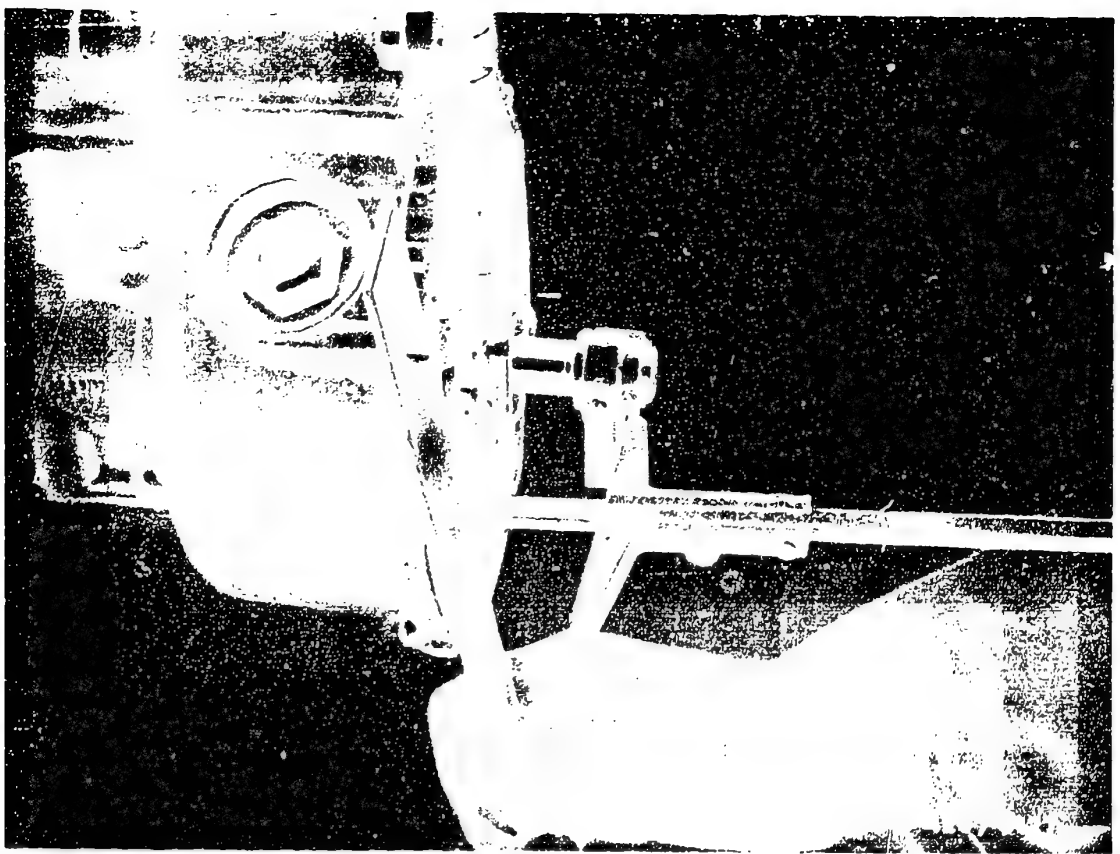
Adjust by means of shims (arrows) so that the slider slides down free of play under its own weight.

**D 16**

Assembling the governor

RQ governors





To adjust the slider dimension, place straightedge on governor housing and, using depth gauge, measure distance between slider and straightedge (picture).

The slider dimension is the measured dimension plus thickness of straightedge minus half thickness of slider.

Specification: 34.9...35.1 mm (without seal)

Note:

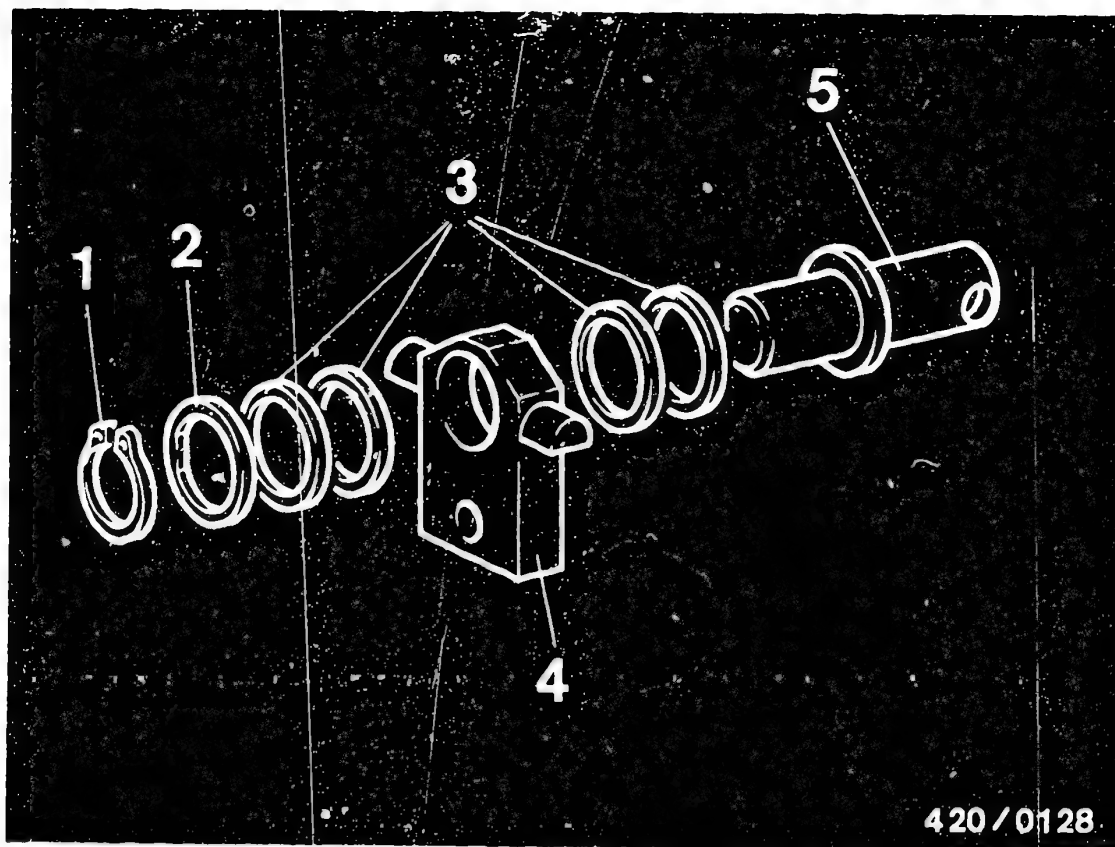
Final checking/adjusting of the slider dimension is done after checking the control-rod travel on the injection-pump test bench (sleeve position).

**D17**

Assembling the governor

RQ governors





420 / 0128

Adjusting the slider dimension without spring-loaded bearing pin

- 1 = Retainer
- 2 = Shim
- 3 = Shims

- 4 = Slider
- 5 = Bearing pin

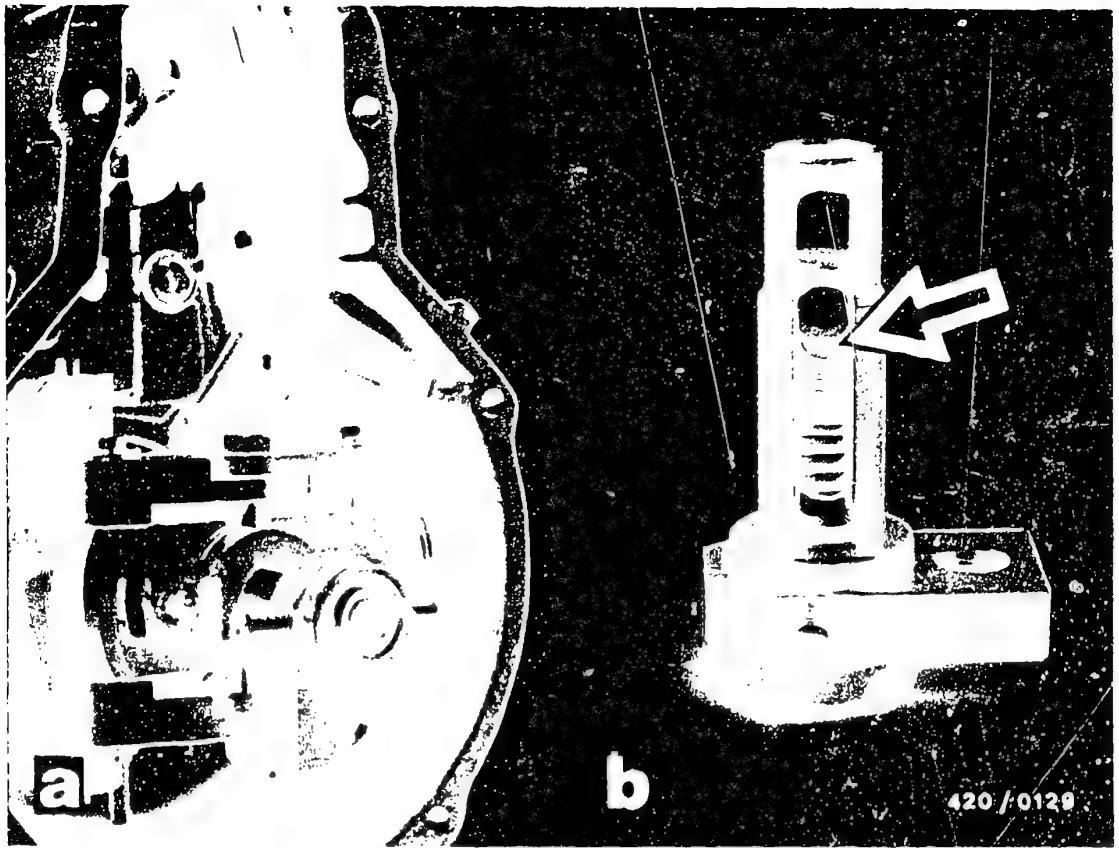
Remove retainer.

Adjust slider dimension by changing the shims (3) so that there is still at least one shim on either side of the slider.

Mount retainer and check adjustment.

Check whether the slider slides down free of play under its own weight.

If necessary, adjust slider play with shims (3).



Adjusting the slider dimension with spring-loaded bearing pin

Remove coupling pin.

Pull bearing pin out of guide bushing.

Adjust slider dimension by turning adjusting screw (picture b-arrow).

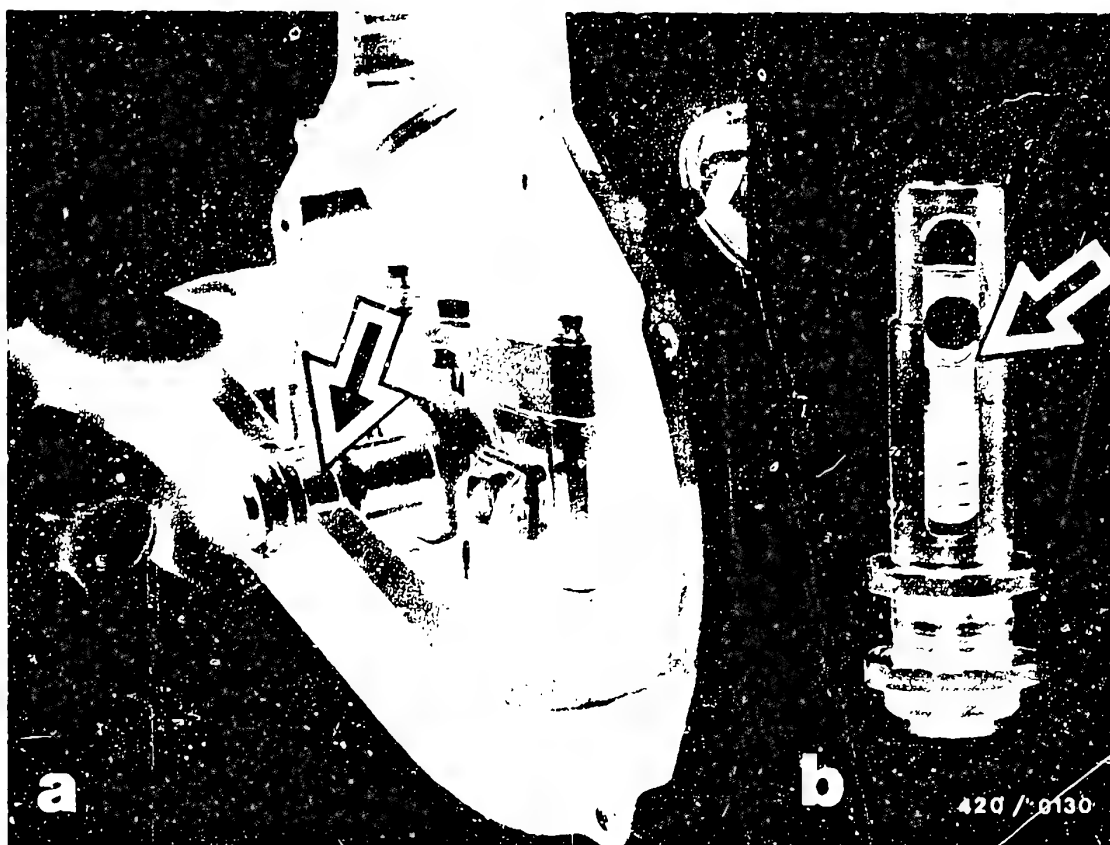
Mount bearing pin and coupling pin. Check adjustment. If necessary, repeat adjustment.

**D 19**

Assembling the governor

RQ governors





In governor versions with RQV components, adjust the slider dimension using measuring shackle 1 682 329 038.

If adjustment is correct, measuring shackle must engage the slider guide in the bearing pin (picture a-arrow).

To adjust, remove coupling pin and bearing pin from governor assembly.

Adjust slider dimension by turning the adjusting screw (picture b-arrow).

Mount coupling pin and bearing pin.

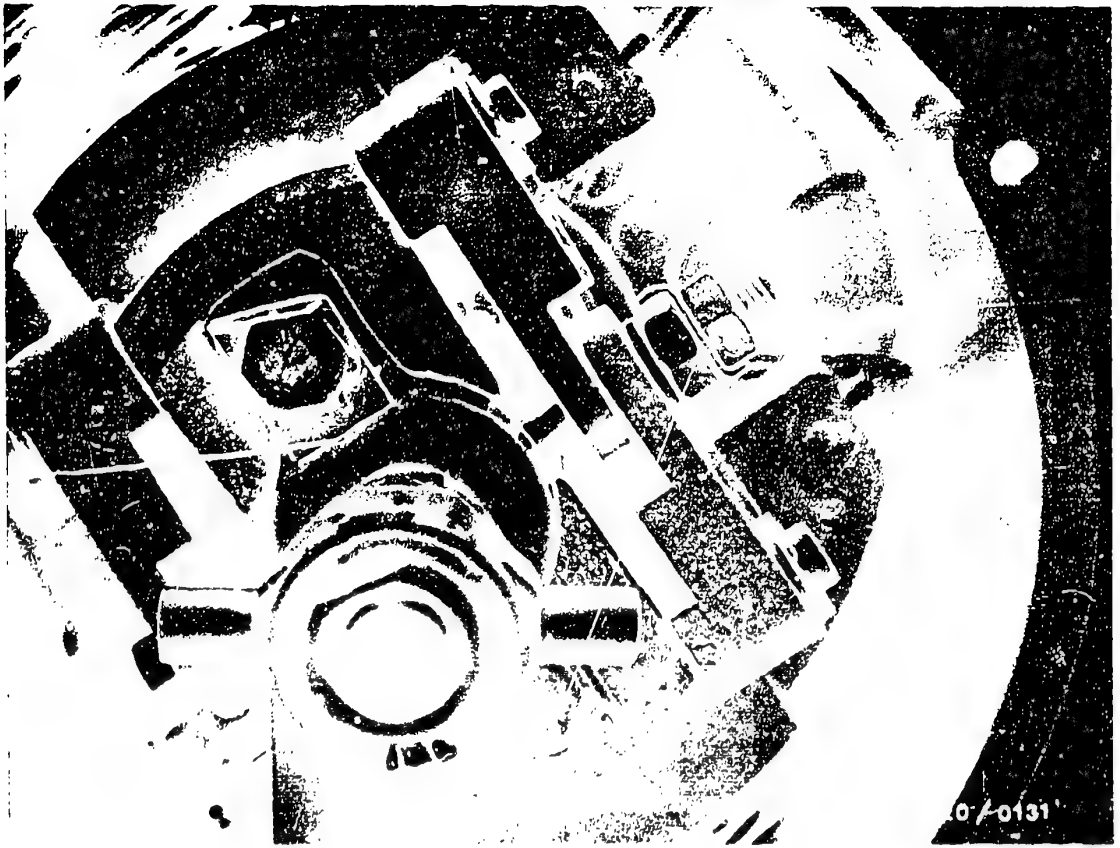
Check adjustment. If necessary, repeat adjustment.

**D20**

Assembling the governor

RQ governors





In this sequence, put on screw plain washer, hexagon nut, lock washer and lock nut onto coupling pin.

Adjust longitudinal play of coupling pin to 0.5...1.0 mm (while pressing outer bell cranks outward).

Tighten hexagon nuts against each other to 6...8 Nm.

Bend lock washer over both hexagon nuts.

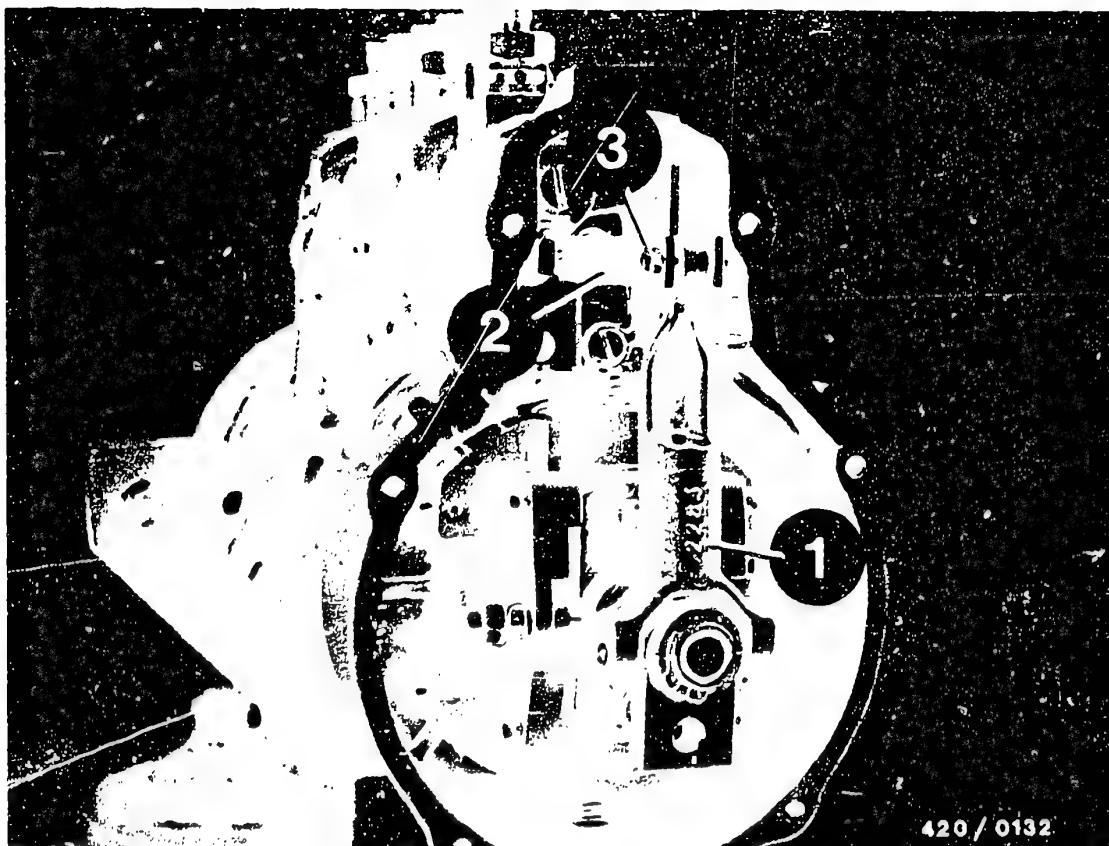
**D21**

Assembling the governor

RQ governors







1 = Fulcrum lever    2 = Link fork    3 = Retaining pin

Hook fulcrum lever into slider.

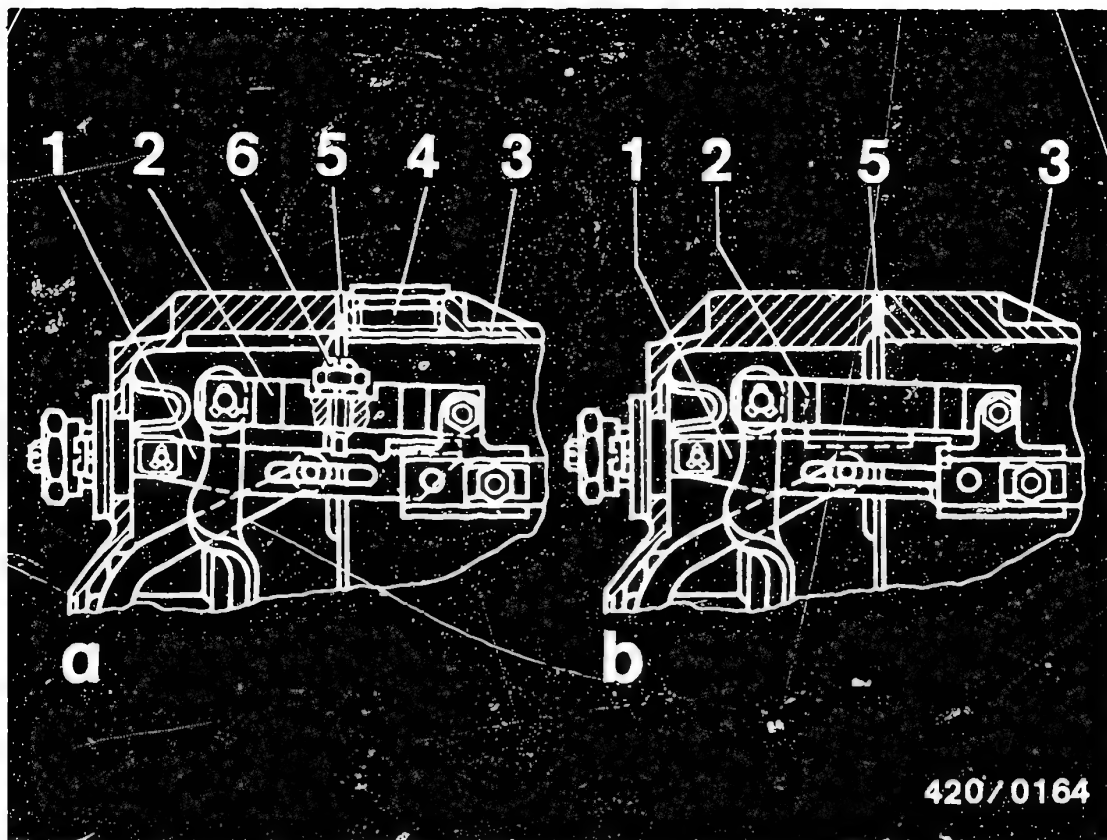
Insert retaining pin into link fork and fulcrum lever.  
See note on next page.

Secure retaining pin with split pin or clamp.

Note:

Install fulcrum lever as shown in picture (open side to the front).





420/0164

a = New version

b = Old version

1 = Stop strap

4 = Screw plug

2 = Link fork

5 = Seal

3 = Housing

6 = Adjusting screw

Adjustable link forks and the corresponding stop straps (picture a) must not be installed in old governor housings and covers (picture b).

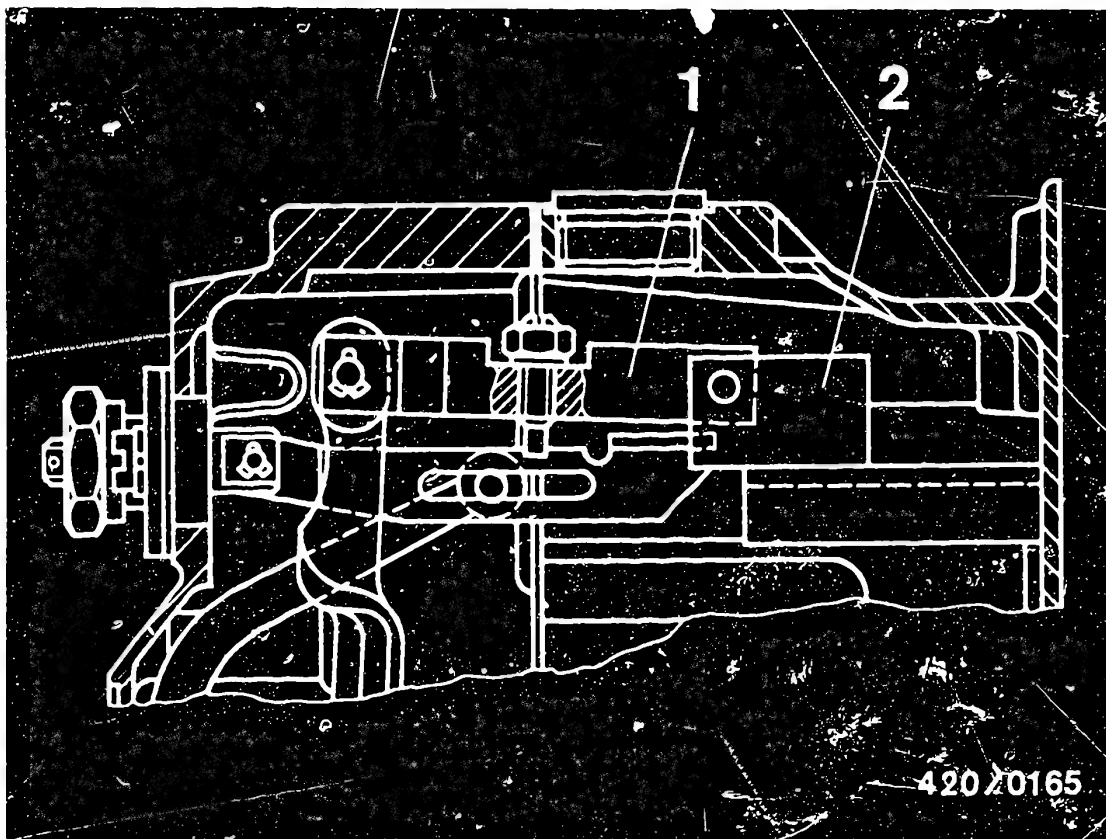
Conversely, old link forks and stop straps may be used in new governor housings and covers.

**D23**

Assembling the governor

RQ governors





1 = Link fork

2 = Strap

In governors of size "P" the strap screwed onto the control rod has been changed. The new strap (picture) may only be used together with the adjustable link fork.

Note:

Governors with adjustable link fork can be identified externally by the screw plug at the top on the governor housing and internally by recesses on cover and housing.

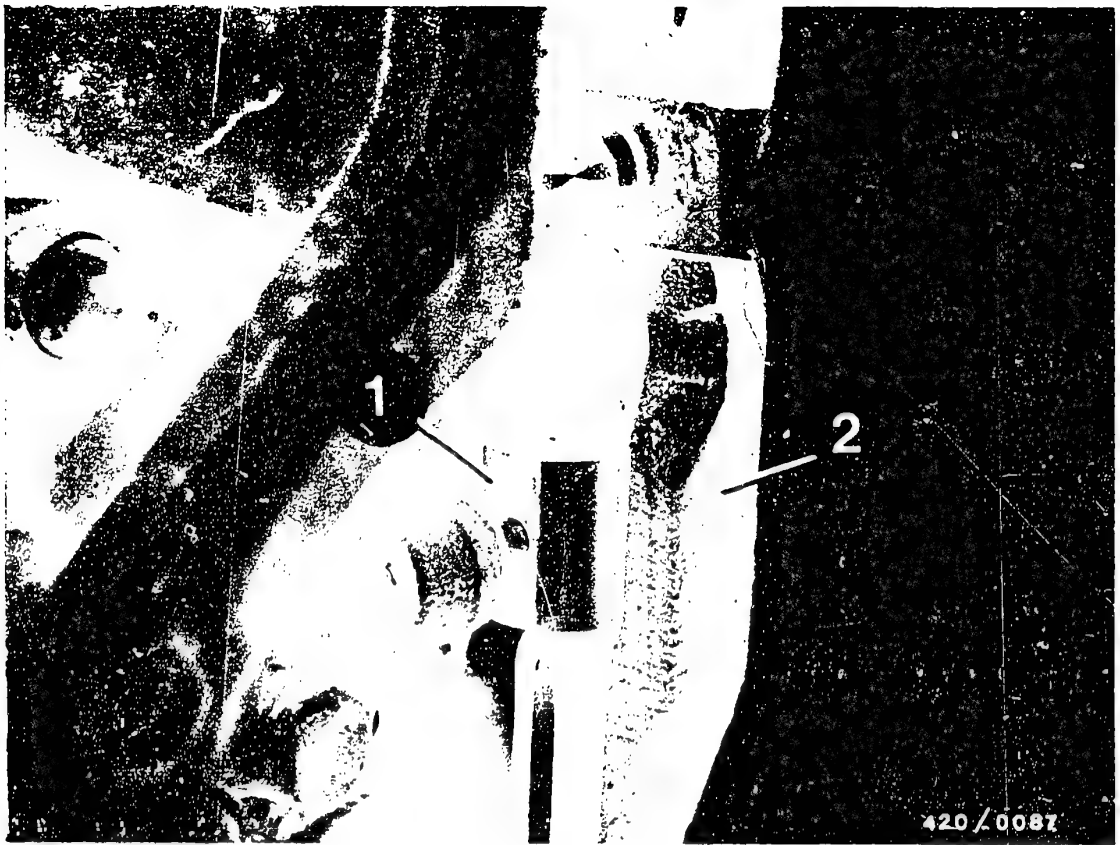
Do not use old version of cover seal for new governor housings.

**D24**

Assembling the governor

RQ governors





Mount governor cover. To do this, position control lever vertically and insert guide block (1) from above into fulcrum lever (2).

Note:

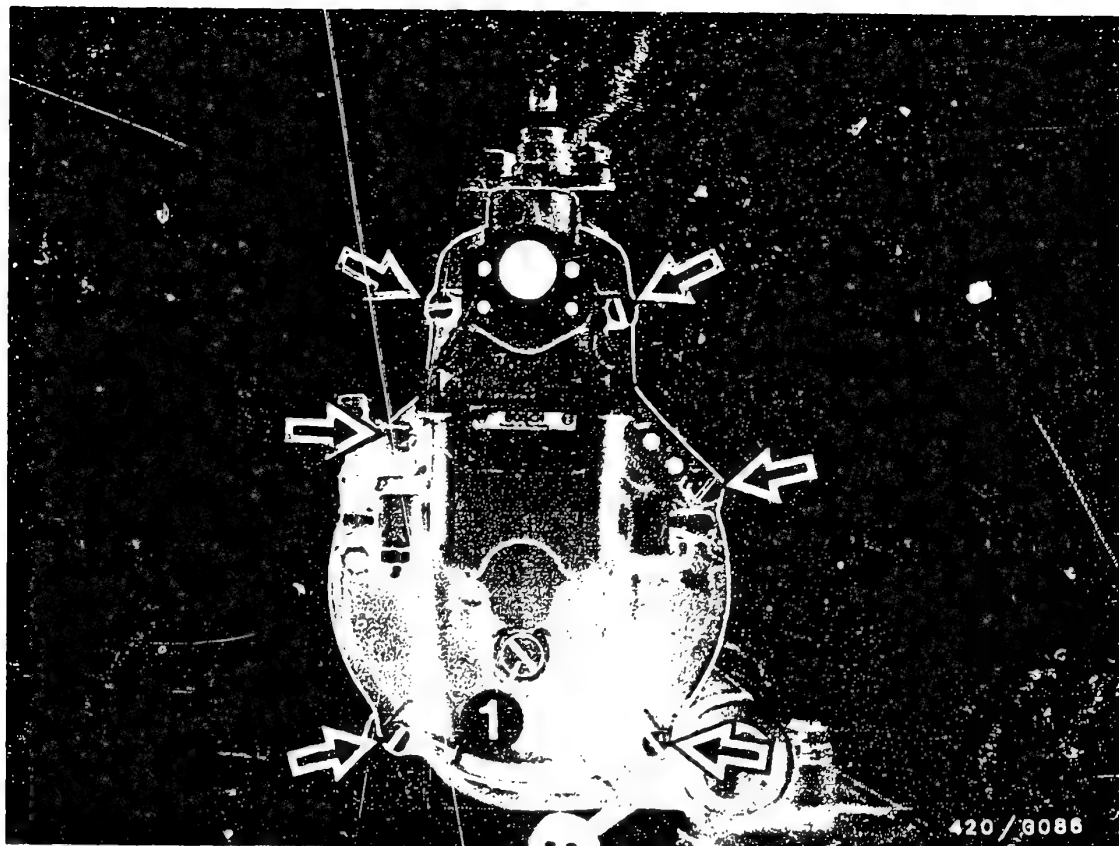
Use new seal between governor cover and governor housing.

**E1**

Assembling the governor

RQ governors





Tighten fastening screws (arrows) to 6...8 Nm (flat-head screw), 7...9 Nm (fillister-head screw).

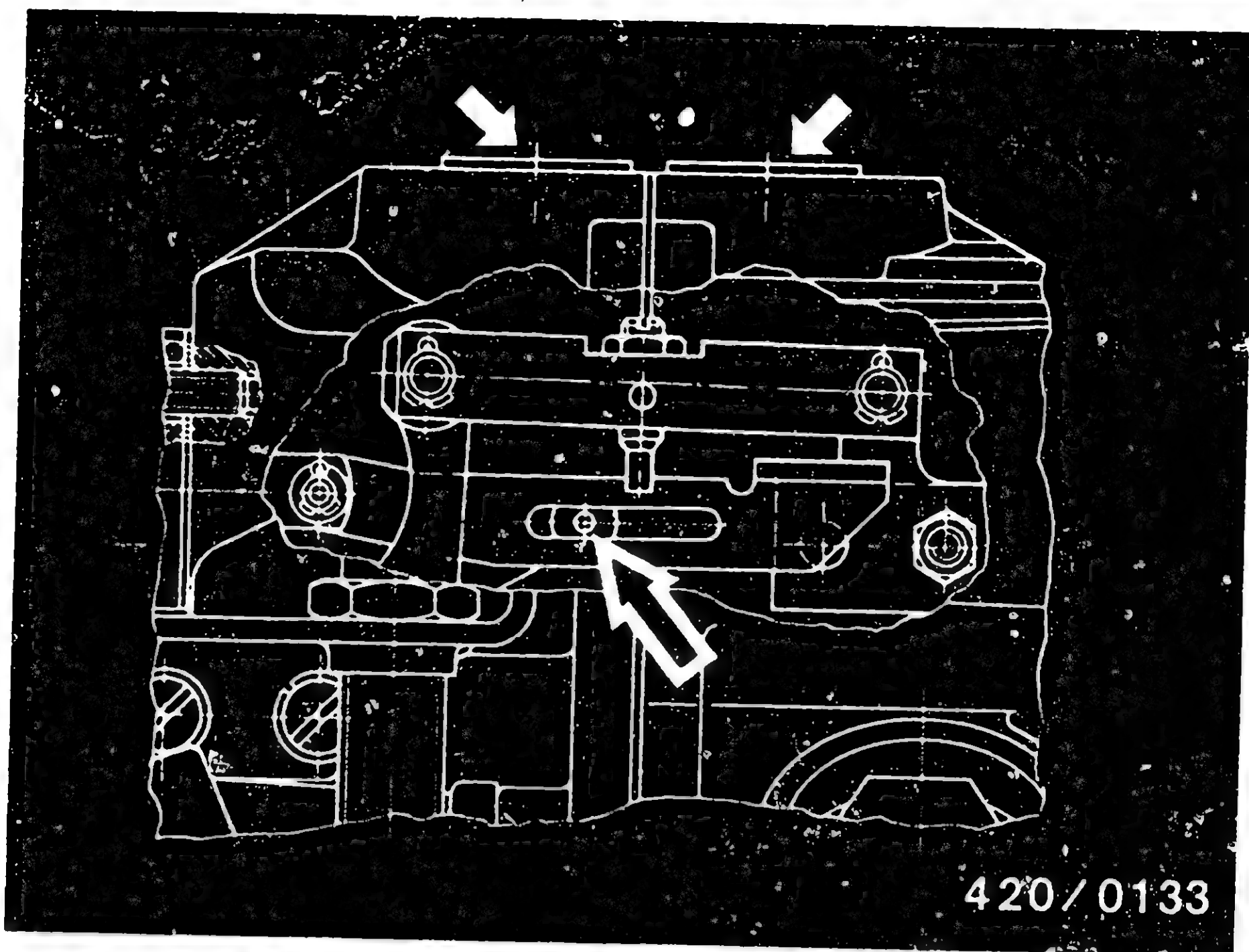
Screw in guide pin (1) with Loctite and tighten to 20...25 Nm.

**E2**

Assembling the governor

RQ governors





### Mounting the manifold-pressure compensator

Unscrew screw plugs on governor cover/housing (upper arrows).

Control lever at fuel shutoff.

Introduce manifold-pressure compensator into governor cover with strap turned through 90° to the left.

Go round fulcrum lever and hook into guide pin of rocker rocker arm (arrow).

The correct positioning of the strap can be checked through the upper adjustment openings and through the spring chamber closing bore.

Tighten fastening screws to 5...7 Nm.

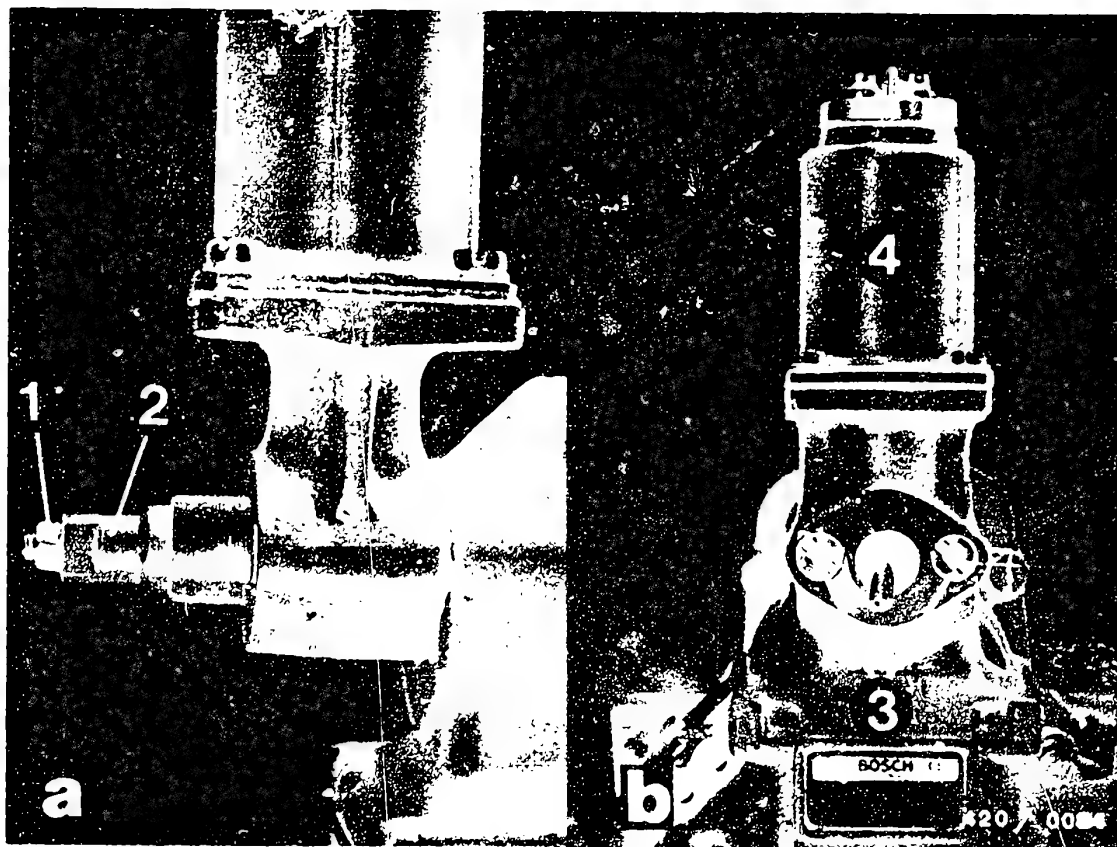
Tighten upper screw plugs to 10...15 Nm.

**E3**

Assembling the governor

RQ governors





Mounting the electrically cancelling excess-fuel starting device (ECS)

Mount solenoid (4) and tighten threaded sleeves (3) to 4...6 Nm (picture b).

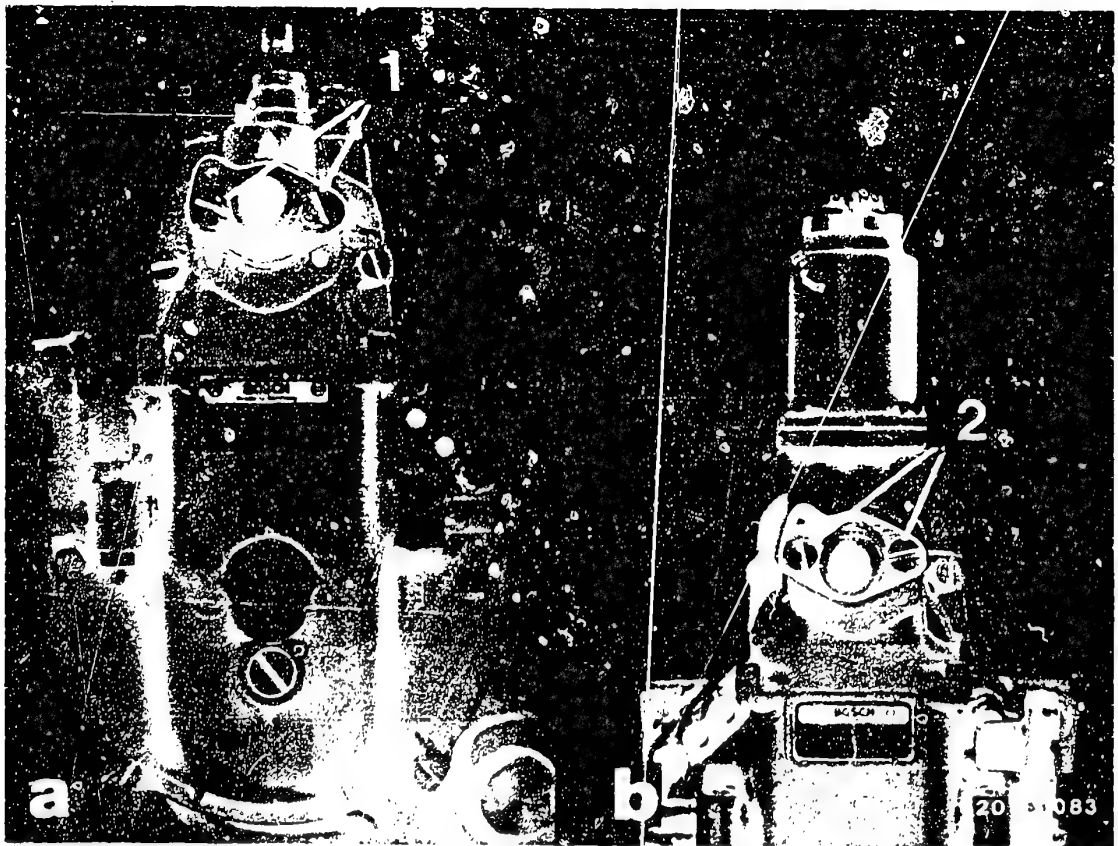
Screw threaded bushing (2) and lock nut (1) onto threaded pin and tighten against each other to 3...4 Nm (picture a).

**E4**

Assembling the governor

RQ governors





Insert control-rod stop or starting-fuel delivery limitation (if applicable).

Put on protective cap and tighten fastening screws (1/2) according to type of screw:

Fillister-head screw	4...6 Nm
Capstan screw	4...6 Nm
Break-off screw	2...3 Nm

Note:

Do not break off break-off screw until after setting on the injection-pump test bench is completed.

**E5**

Assembling the governor

RQ governors





Leak test on camshaft chamber, spring chamber and governor chamber

Finish off assembly of injection pump.

Compressed air is required for the leak test. Introduce into camshaft chamber of pump at suitable point (e.g. oil inspection bore).

Immerse injection pump vertically into test bath.

Test duration and test pressure:

A and MW pumps:	3 min. at 1.5 bar, then 1 min. at 0.5 bar
P pumps:	7 min. at 1.5 bar, then 1 min. at 0.5 bar

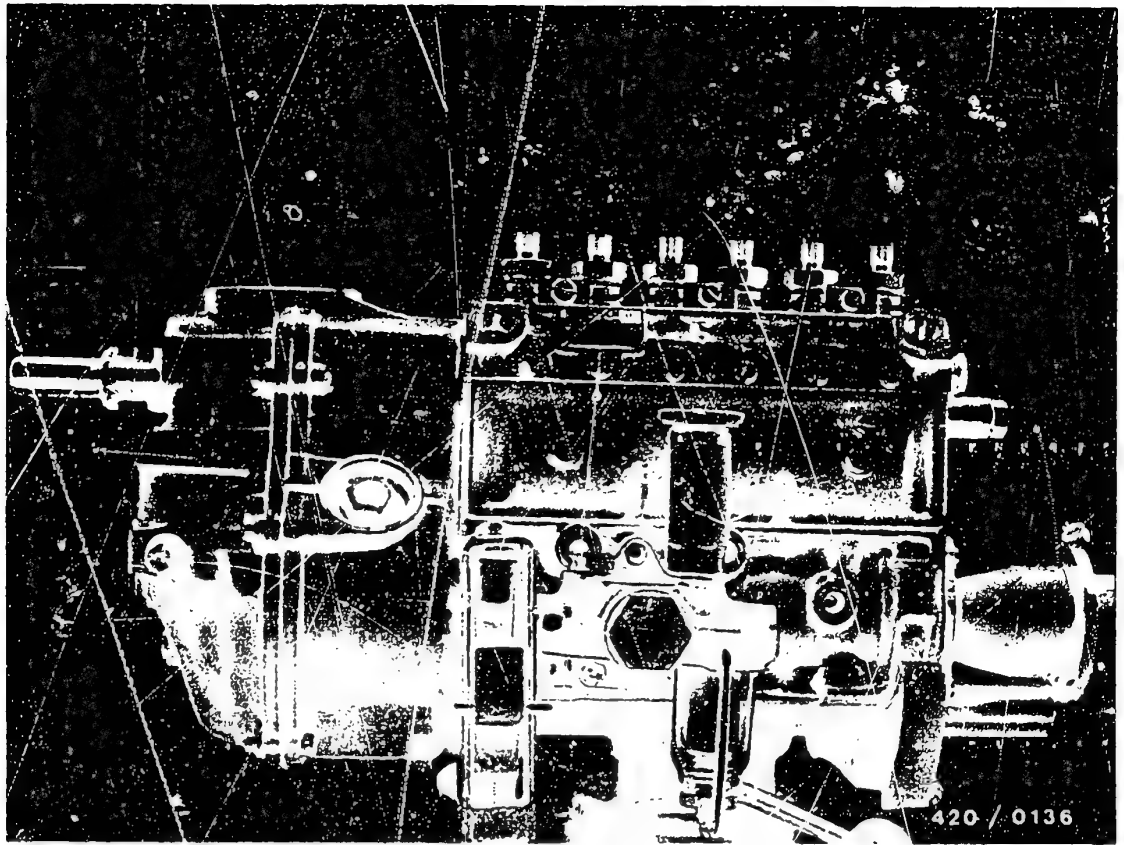
Then visually examine whether there are any leaks at joints, screw connections, seal rings and end covers on housing and cover. No air bubbles may be visible.

To prevent possible skin rashes, grease hands beforehand with protective skin cream and wash with soap and water after test is completed.

**E6**

Assembling the governor  
RQ governors





## 10. DISMANTLING RQV GOVERNORS

### Preliminary operations:

Clamp injection pump according to type series and kind of mounting (see respective pump repair instructions).

If attached, remove drive components (multi-plate clutch, gear or timing device) using suitable KDEP or commercially available tools.

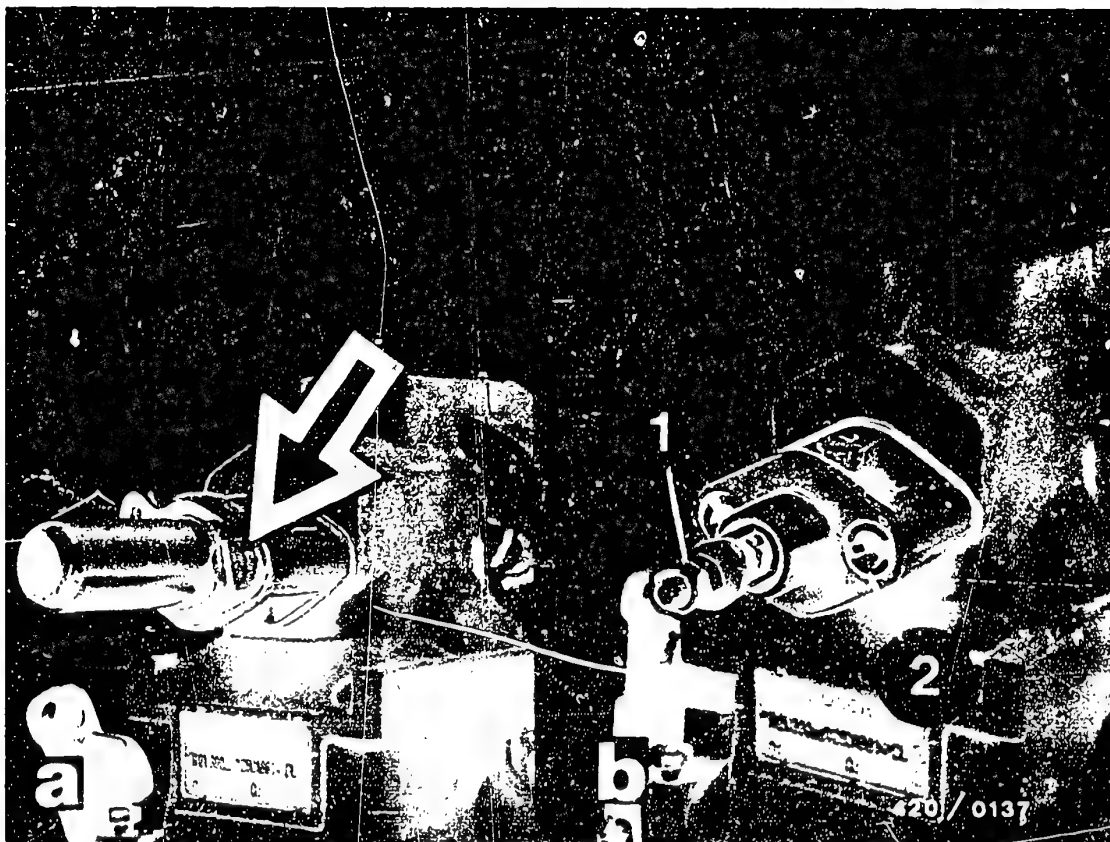
Mount and tighten driving coupling to suit cone diameter of camshaft.

**F1**

Dismantling the governor

RQV governors





Remove protective cap fastening screws from full-load control-rod stop with external torque-control (if applicable) (picture a-arrow).

Unscrew hexagon nuts (picture b-1) from threaded pin.

Unscrew threaded sleeves (picture b-2) and pull stop out of governor cover.

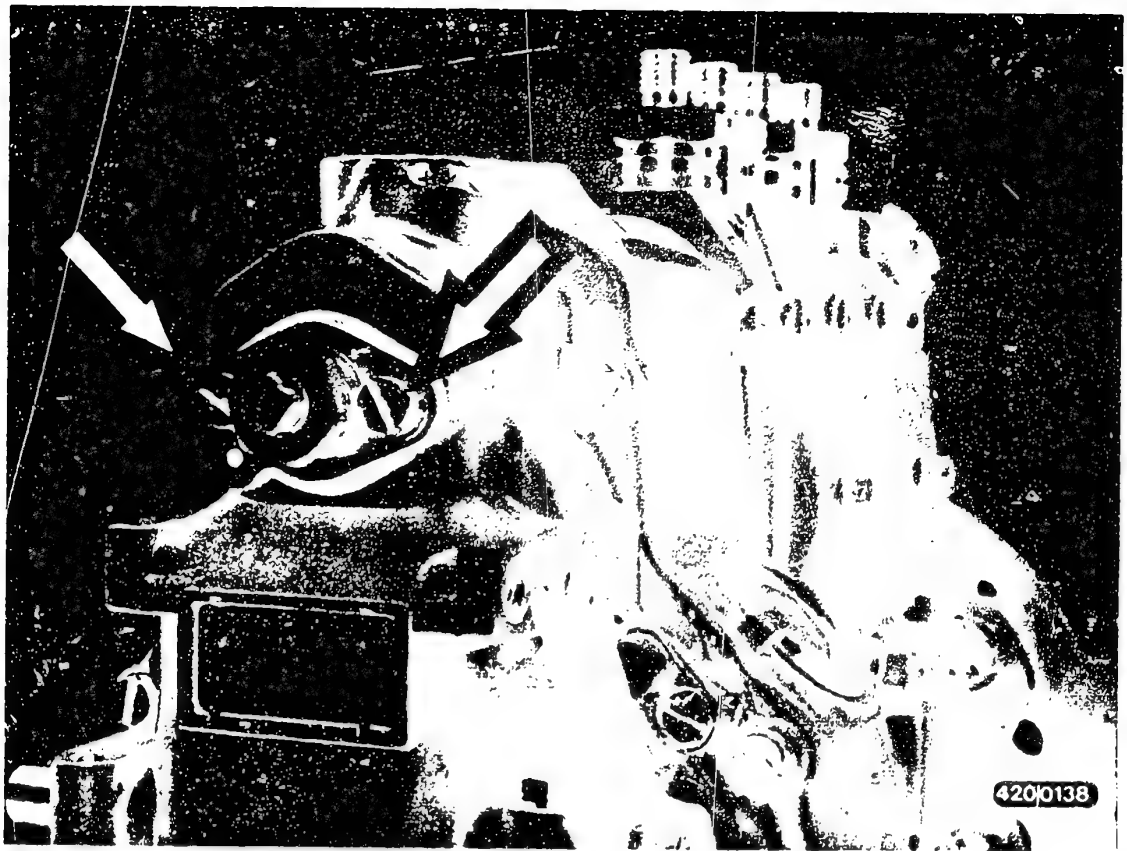
Note:

Have a sufficient number of storage boxes available for storing the components.

**F2**

Dismantling the governor  
RQV governors





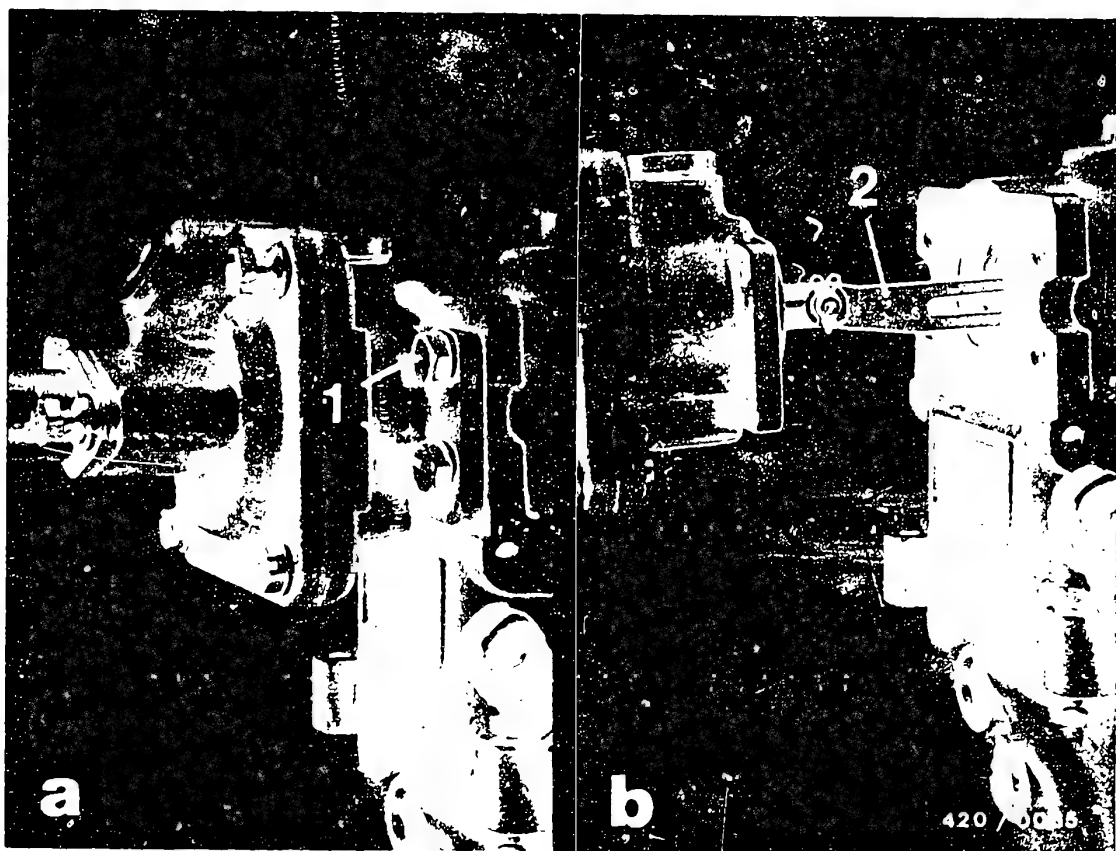
In case of full-load control-rod stop without torque control, remove fastening screws (arrows) and pull stop out of governor cover.

**F3**

Dismantling the governor

RQV governors





In case of versions with manifold-pressure compensator mounted on governor cover, unscrew fastening screws (picture a-1).

Bring control lever up against shutoff stop.

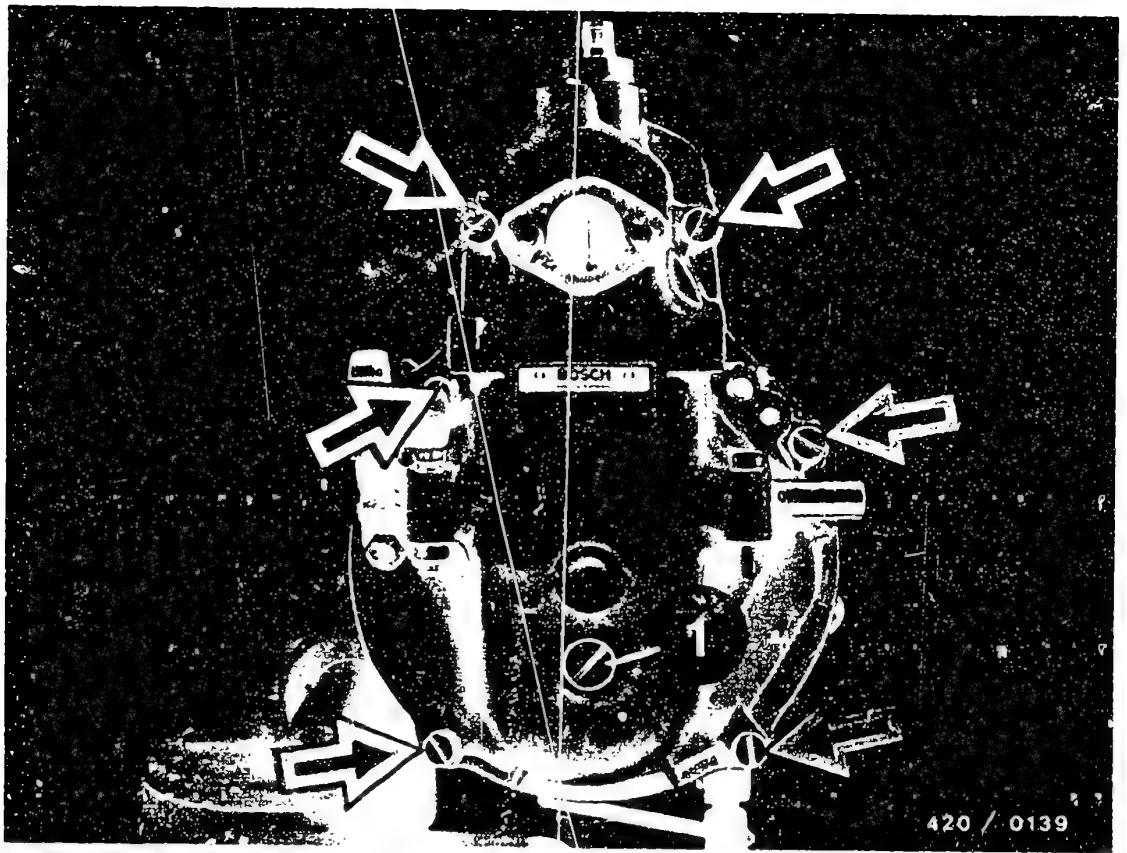
With strap (picture b-2) turned through 90° to the left, pull manifold-pressure compensator out of governor cover.

**F4**

Dismantling the governor

RQV governors





Unscrew guide pin (1) and fastening screws of governor cover (arrows).

Separate governor cover from governor housing, carefully tapping with a rubber hammer if necessary.

Note:

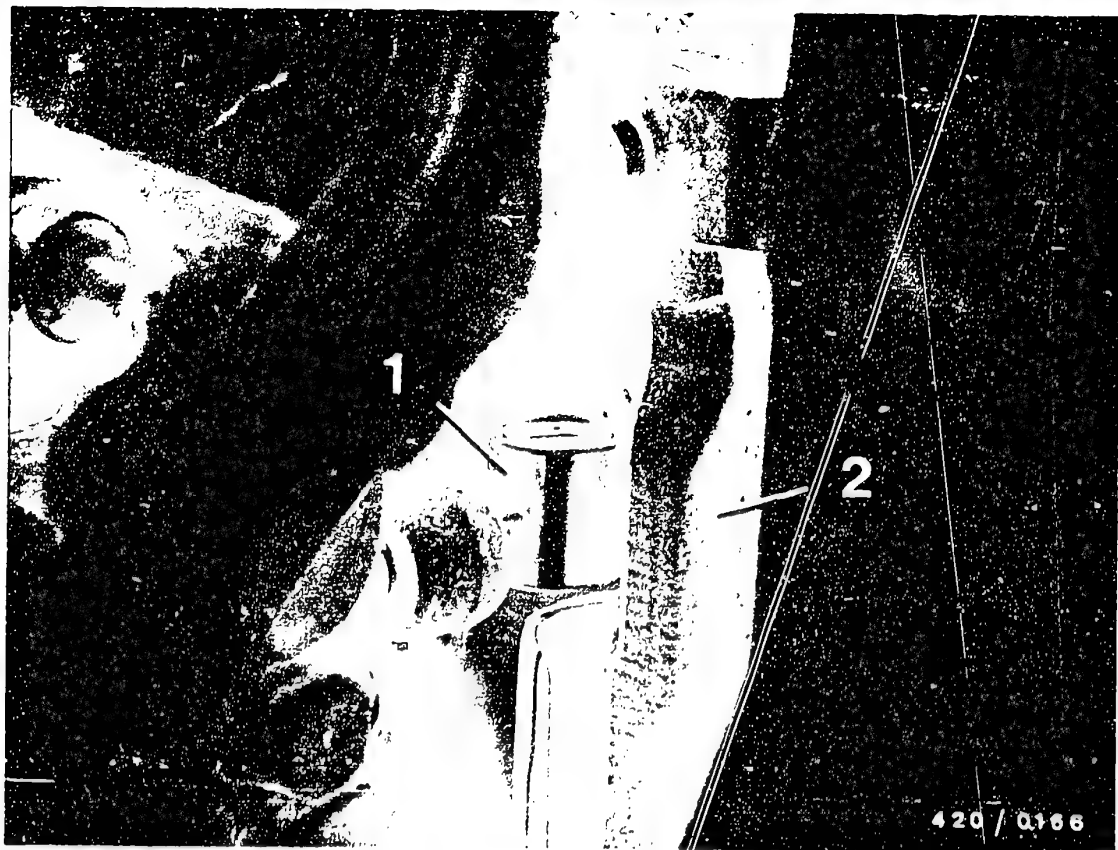
Catch escaping oil in a pan.

**F5**

Dismantling the governor

RQV governors





1 = Guide block

2 = Fulcrum lever

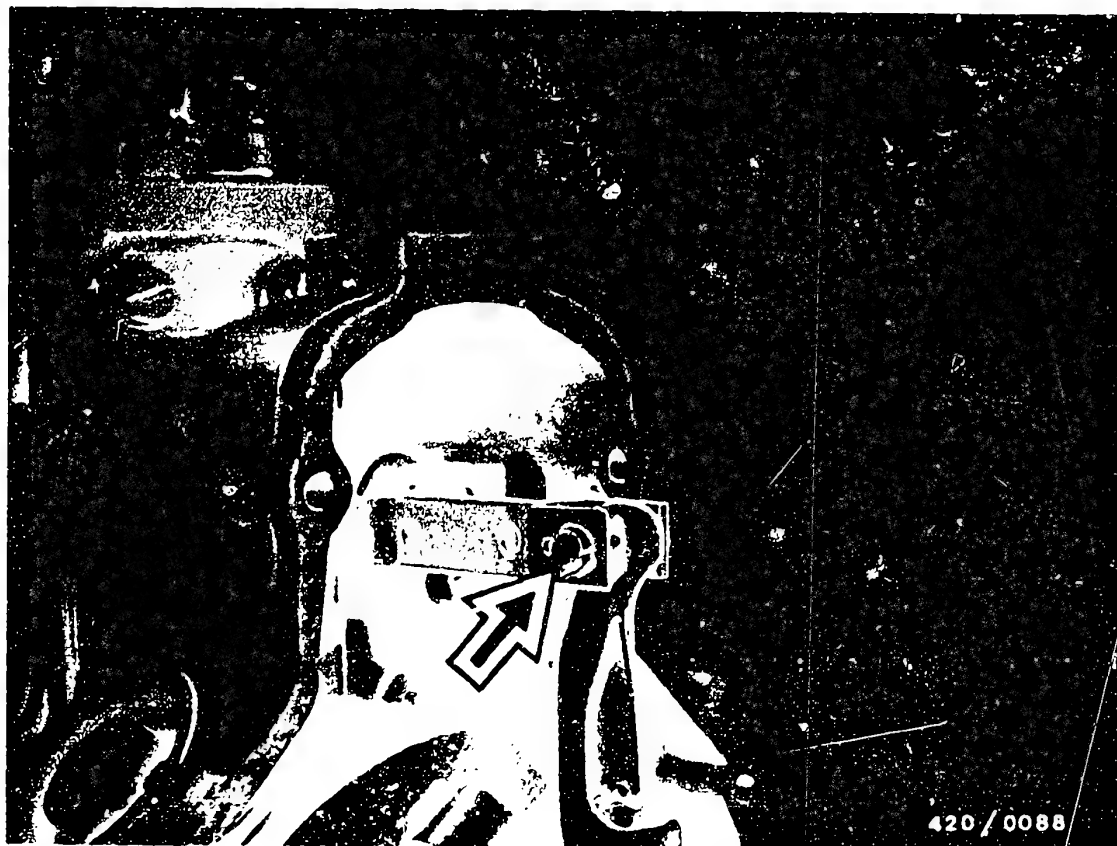
Place control lever in a vertical position and withdraw guide block upward out of fulcrum lever.

**F6**

Dismantling the governor

RQV governors





Remove split pin or locking clamp from retaining pin (arrow) and pull pin out of link fork and fulcrum lever.

Bring link fork up against governor housing and hold in place with rubber band.

Release fulcrum lever from slider (tilt through  $90^\circ$ ).

Remove slider.

0

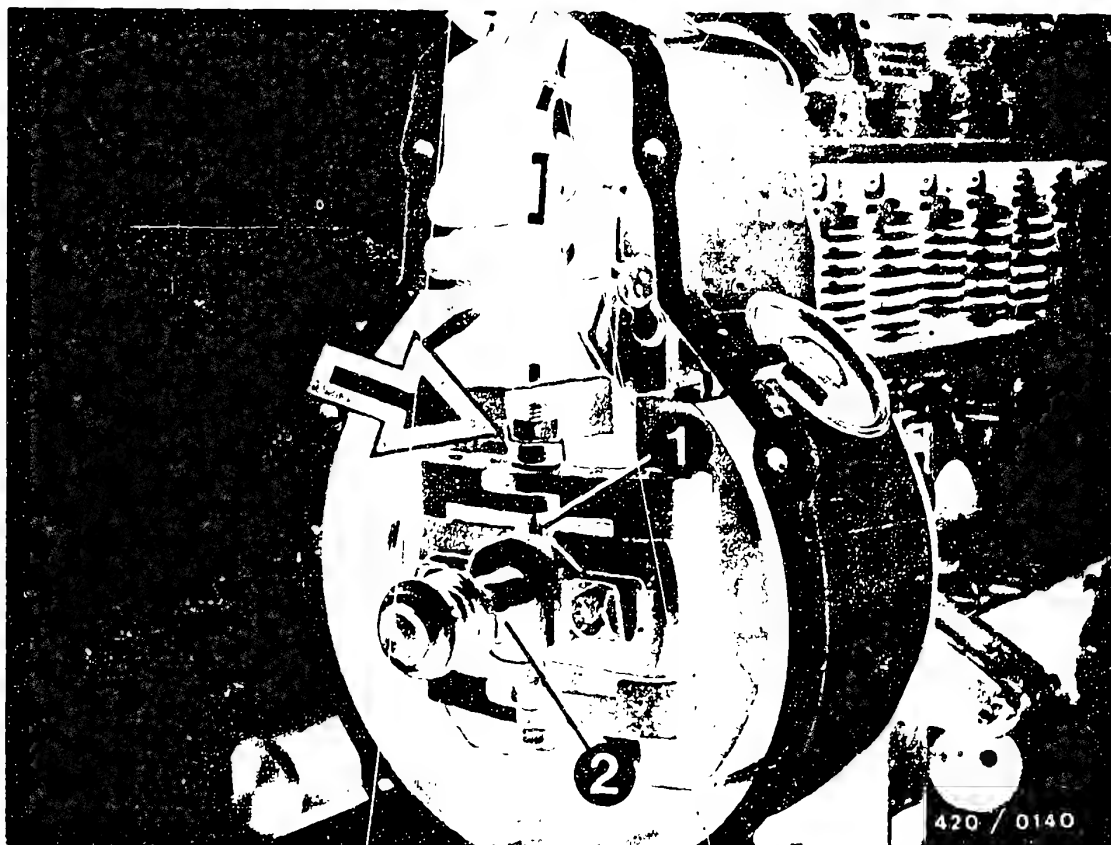
**F7**

Dismantling the governor

RQV governors







1 = Coupling pin

2 = Bearing pin

Bend up tab washer (arrow) on coupling pin (1) and unscrew hexagon nuts.

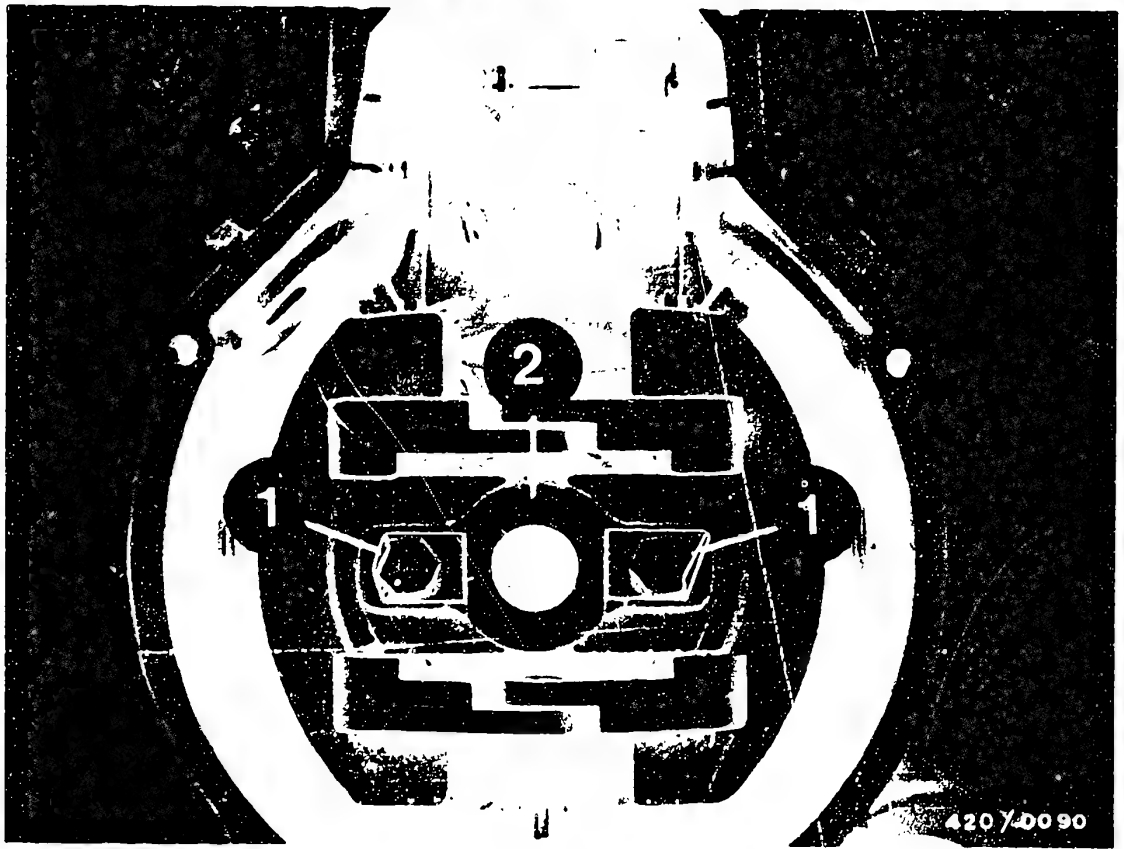
Pull coupling pin up out of governor assembly and then pull bearing pin out of guide bushing.

**F8**

Dismantling the governor

RQV governors





1 = Tab washers

2 = Guide bushing

Bend up tab washers and unscrew fastening screws of guide bushing.

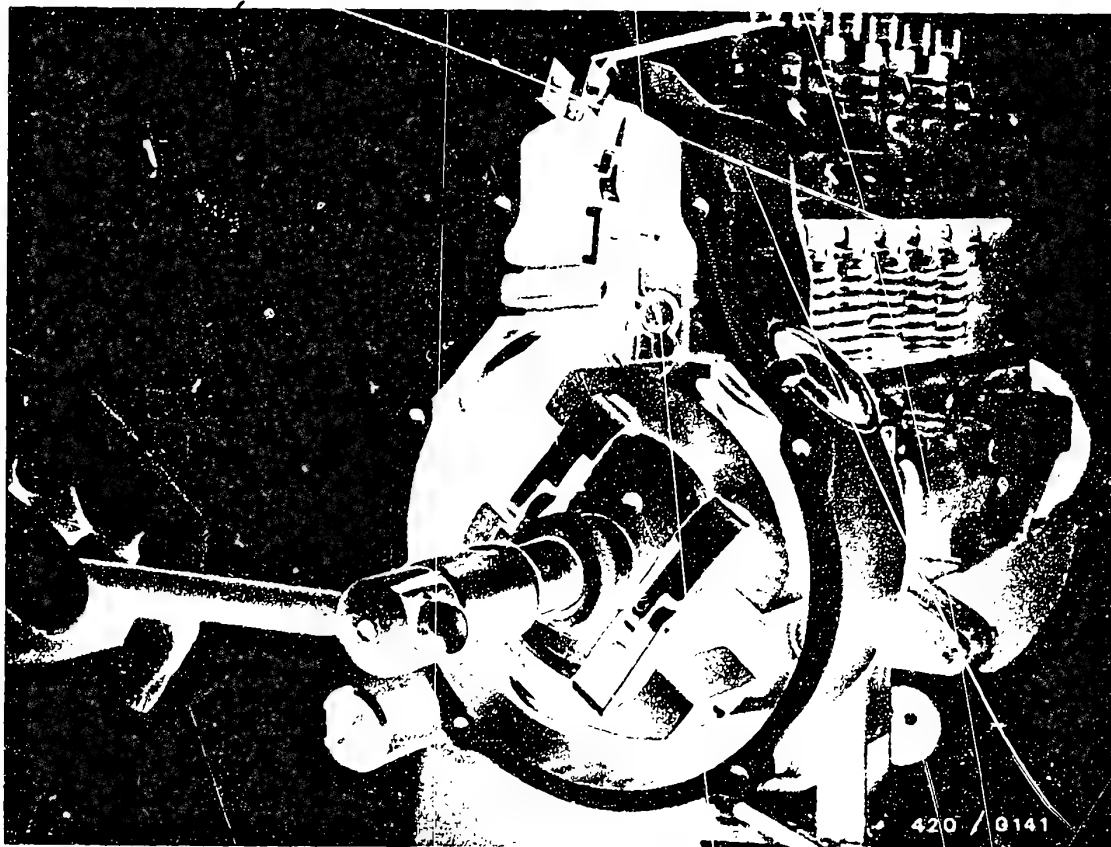
Remove guide bushing.

**F9**

Dismantling the governor

RQV governors



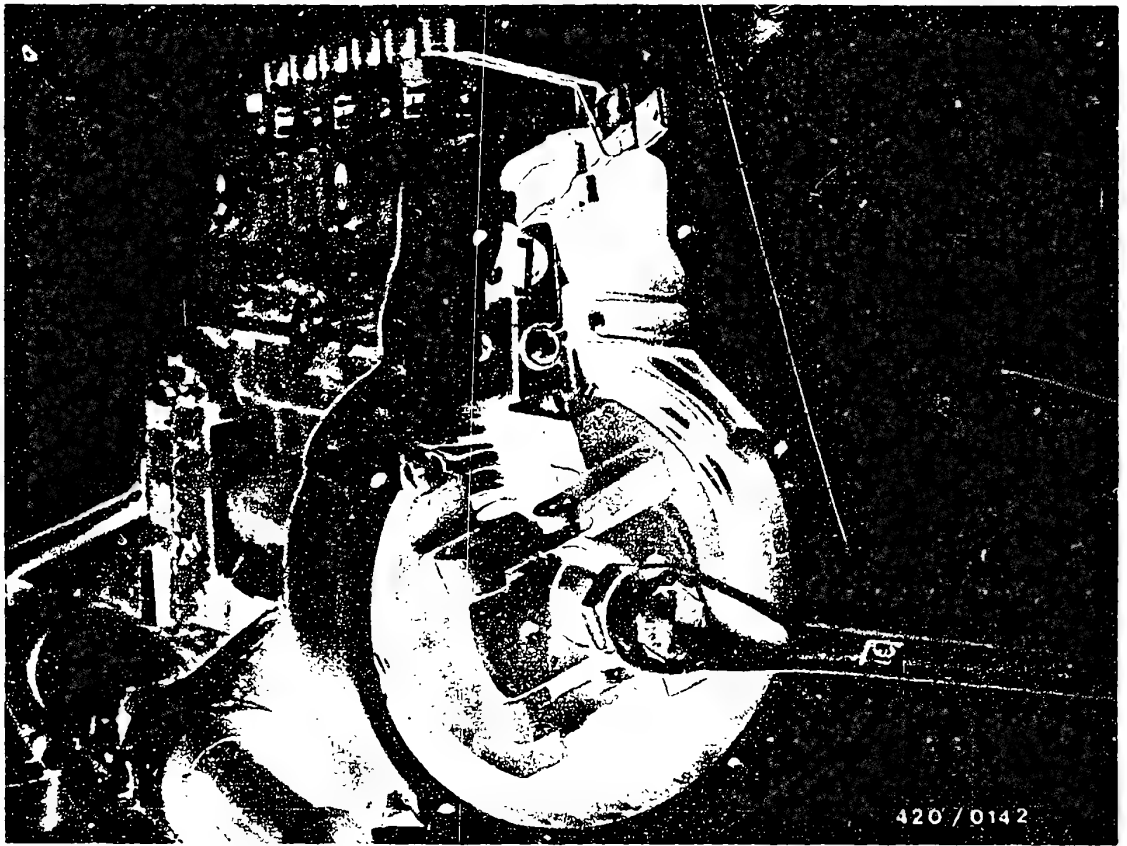


Using socket wrench KDEP 2988, loosen round nut of governor assembly and unscrew.

**F10**

Dismantling the governor  
RQV governors





Using puller KDEP 2886, loosen governor assembly from camshaft.

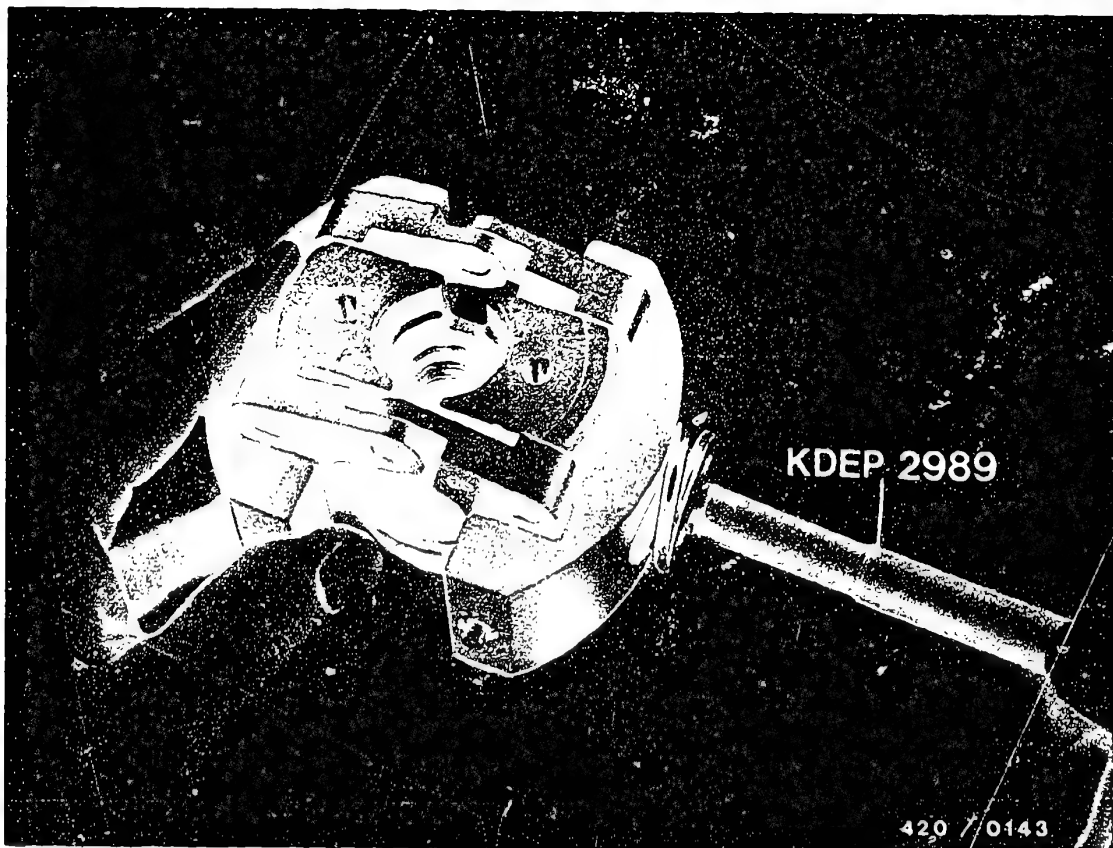
Unscrew puller and remove shim for adjustment of longitudinal play of governor assembly.

**F11**

Dismantling the governor

RQV governors



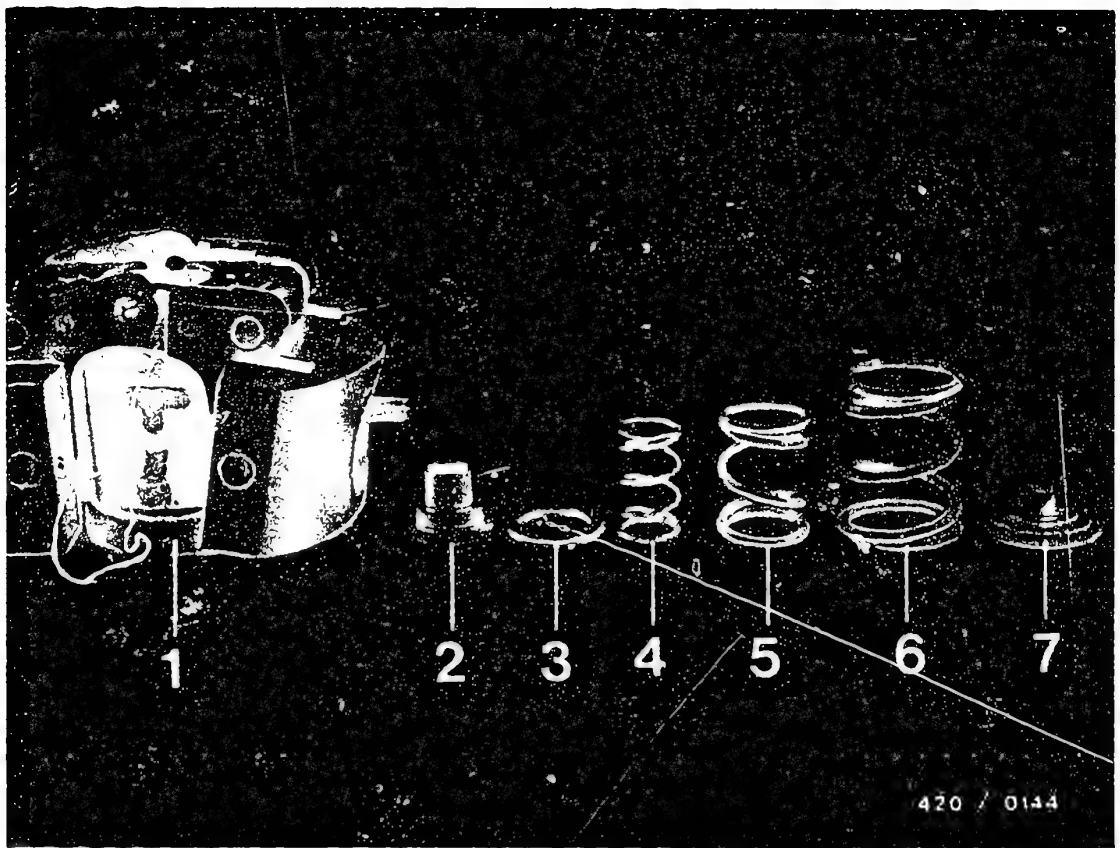


Using pin-type socket wrench KDEP 2989, unscrew round nut from threaded pin of governor assembly.

**F12**

Dismantling the governor  
RQV governors





1 = Governor assembly  
2 = Inner spring seat  
3 = Shims  
(if applicable)

4/5 = Max. speed springs  
6 = Idle spring  
7 = Outer spring seat

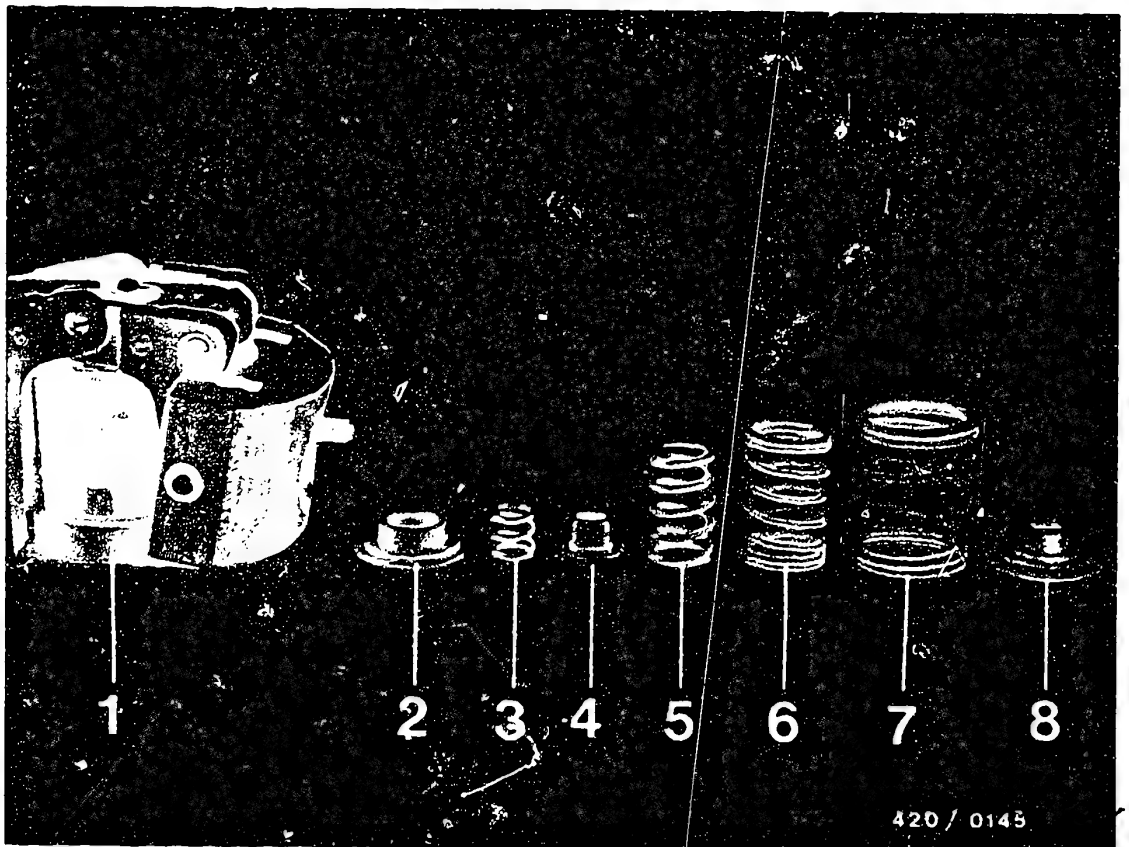
Remove spring seats, governor springs and shims from flyweight assemblies.

**F13**

Dismantling the governor

RQV governors





1 = Governor assembly

2 = Inner spring seat

3 = Aux. max. speed spring

4 = Spring retainer

5/6 = Max. speed springs

7 = Idle spring

8 = Outer spring seat

If governor assembly has auxiliary max. speed spring, remove components shown from flyweights.

Note:

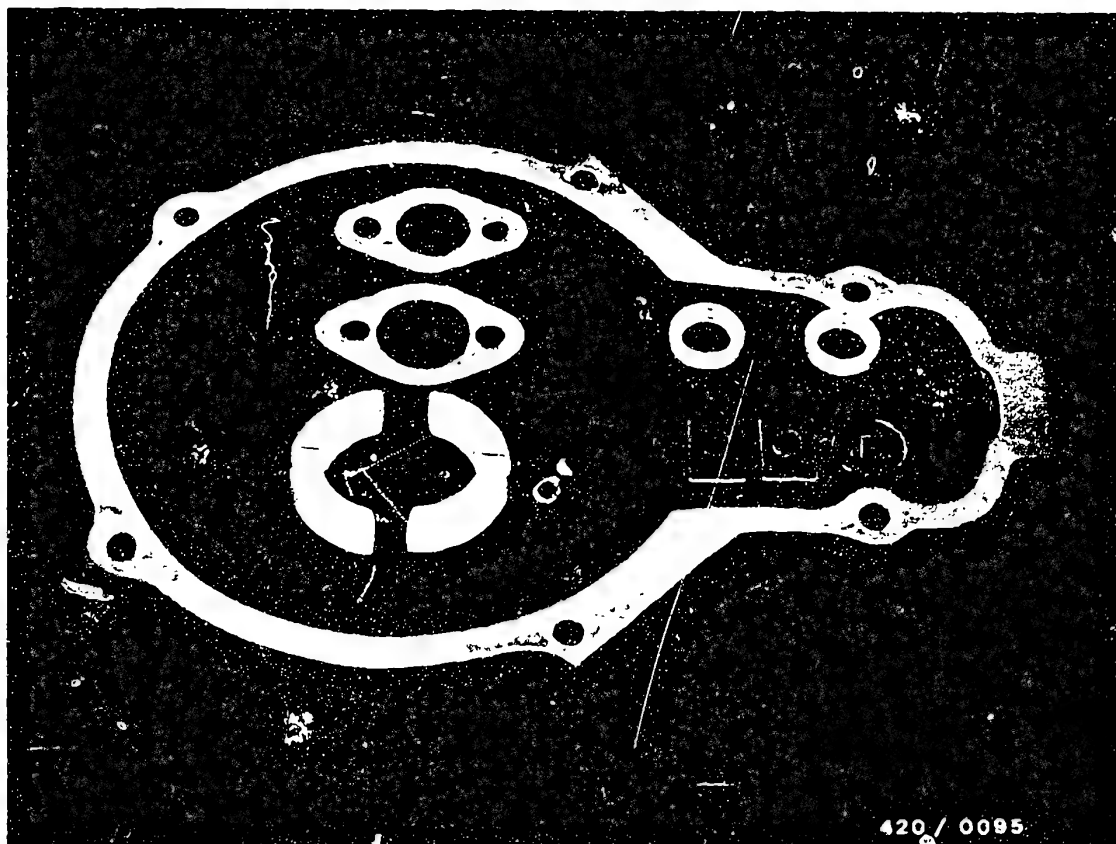
This governor assembly can be distinguished from the standard RQV version by its stronger spring preload.

**F14**

Dismantling the governor

RQV governors





### 11. CHECKING THE COMPONENTS

Wash out all components thoroughly so that they are clean.

Replace worn or damaged components.

Always replace flat flange gaskets, radial-lip-type oil seals, rubber buffers and tab washers (see picture).

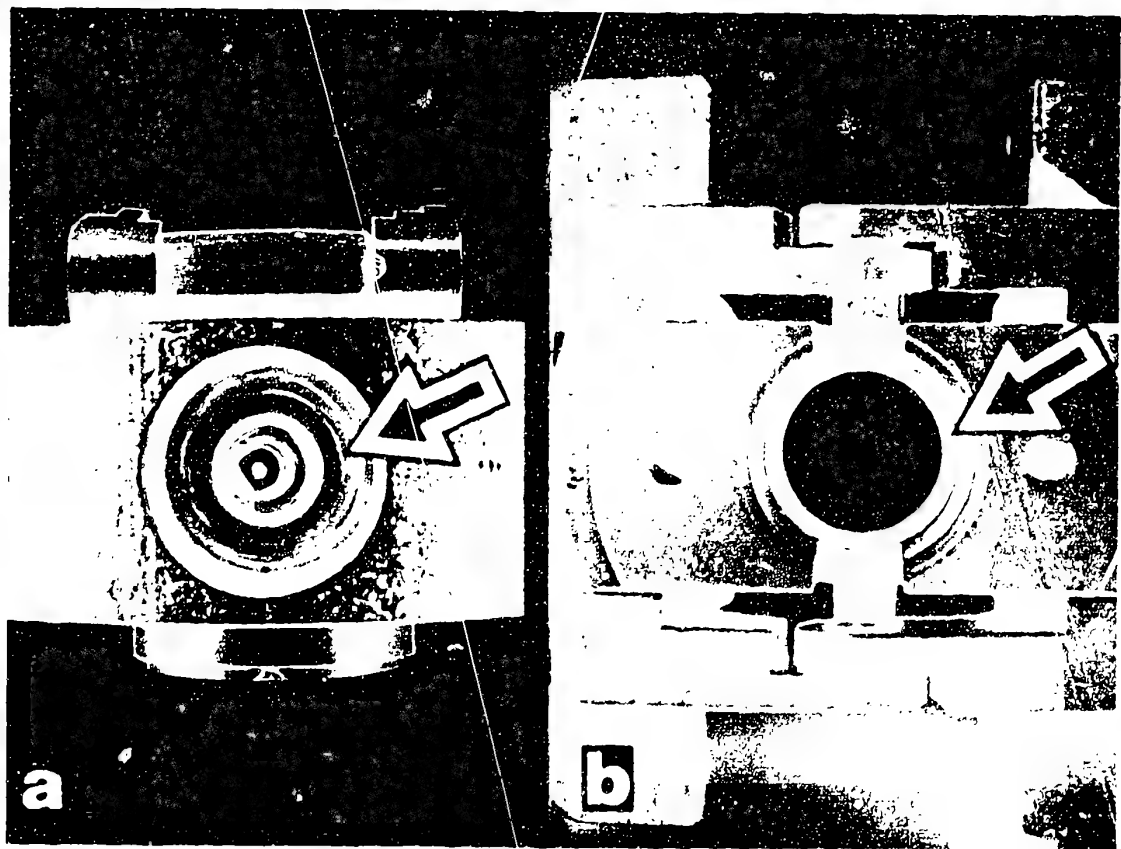
**F15**

Checking the components

RQV governors







### Checking the governor assembly

Replace the governor assembly if damaged as listed below:

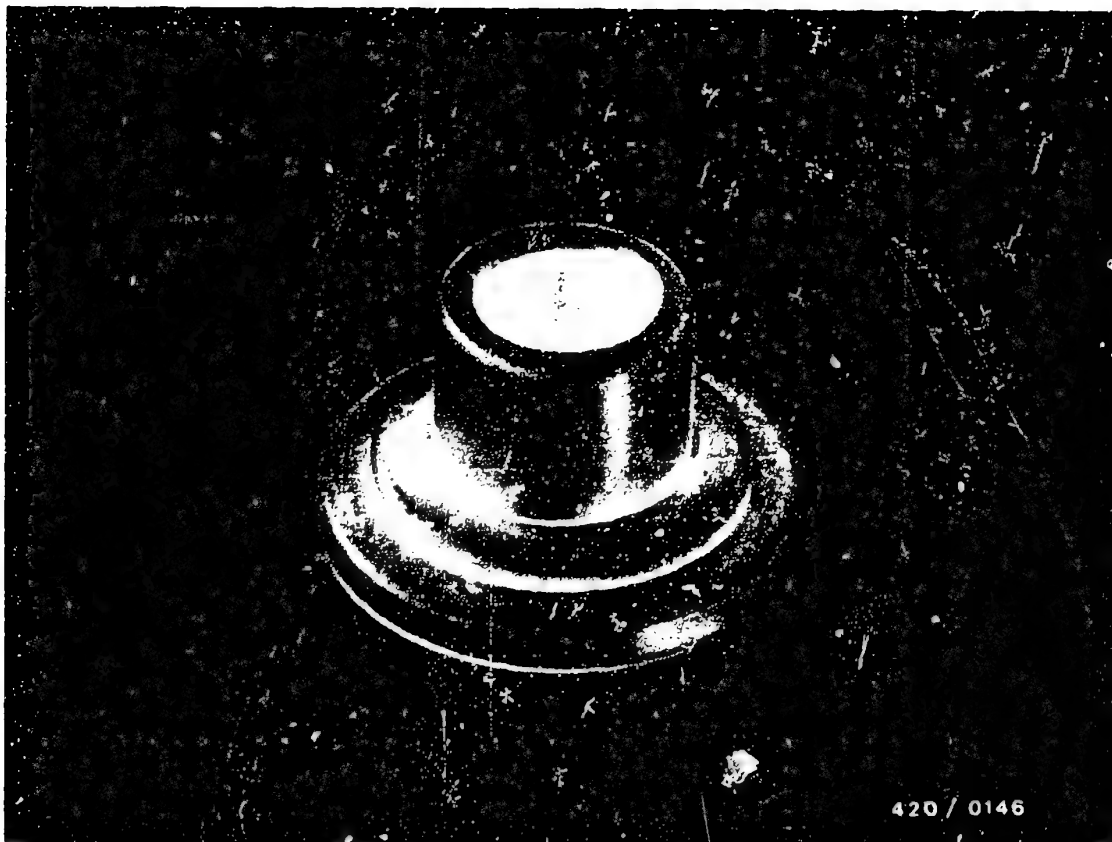
- Worn bottoms of flyweights (picture a-arrow)
- Worn web (picture b-arrow)
- Loose retaining pins (movable in axial direction)
- Wear on bell cranks
- Bent threaded pins

**F16**

Checking the components

RQV governors





To prevent renewed wearing, the hardened washer 2 420 101 027 can be added in the bottom of the flyweights on a new governor assembly.

To prevent the idle stage from being reduced by the thickness of the added washer, use a correspondingly shorter inner spring seat (picture).

Idle stage 2 mm - spring seats 2 420 328 033 ... 035  
Idle stage 3.5 mm - spring seat 2 420 328 036.

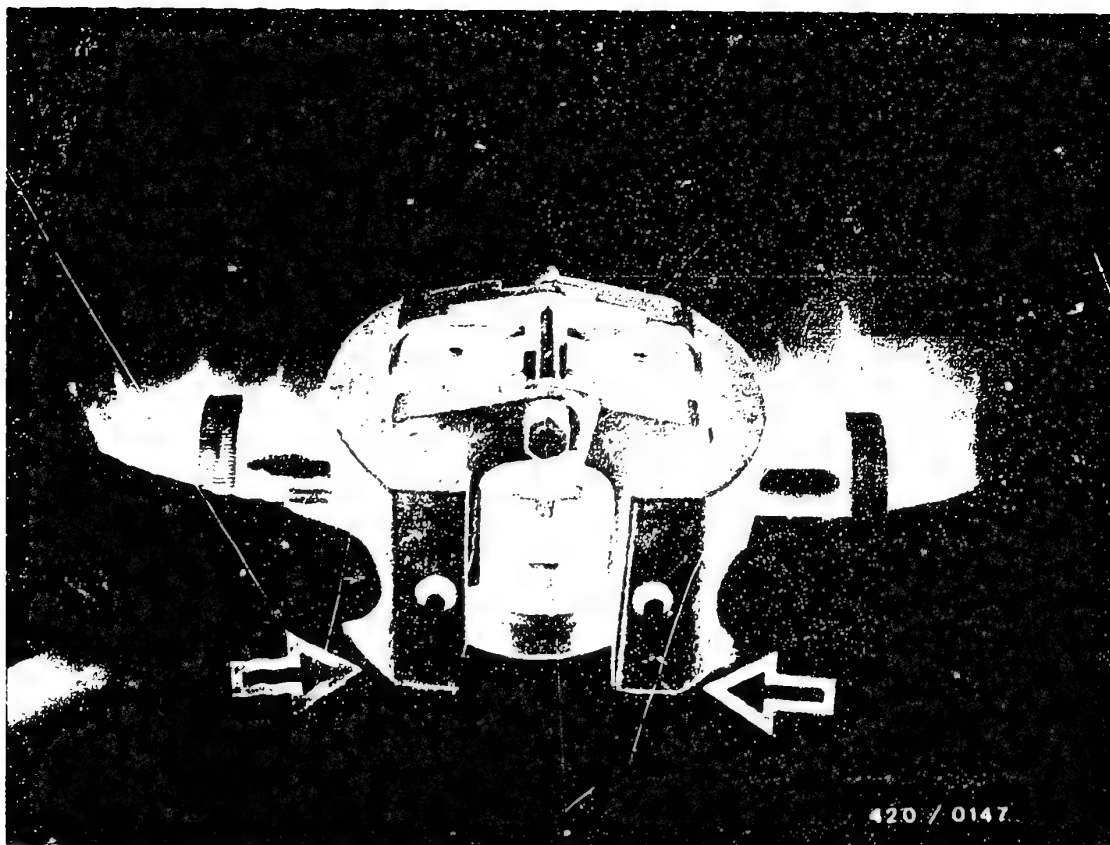
The new spring seat is determined from the thickness of the old spring seat less the dimension of the hardened washer.

**F17**

Checking the components

RQV governors





To establish the idle stage, insert old spring seats into both flyweight assemblies and lock with locking sleeves KDEP 1586.

Lay flat drive end of governor assembly.

Provisionally insert coupling pin.

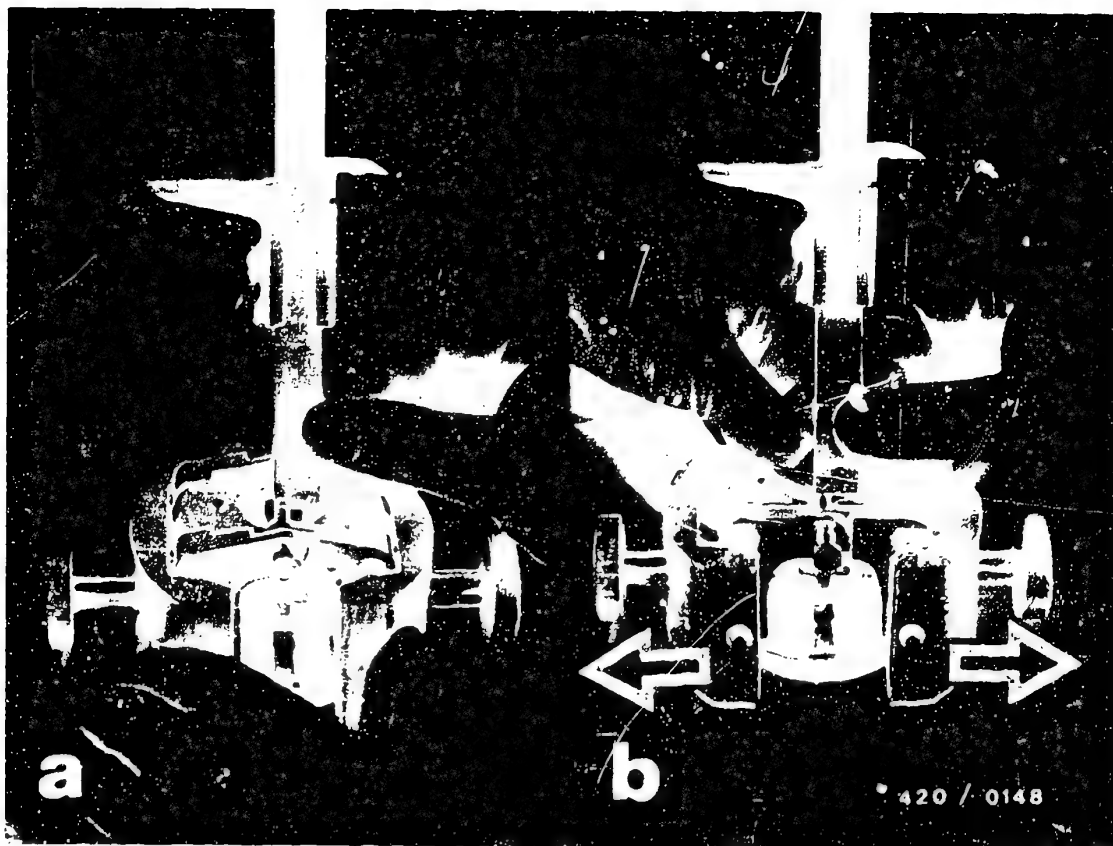
Press flyweight assemblies together (arrows).

**F18**

Checking the components

RQV governors





Using caliper gauge, measure distance between coupling pin and seating surface. Make note of measurement. (Picture a).

Then pull the flyweight assemblies apart until the spring seats make contact (picture b-arrows).

Press on coupling pin and again measure the distance between coupling pin and seating surface (picture b).

The difference between both measurements is the idle stage of 2 or 3.5 mm.

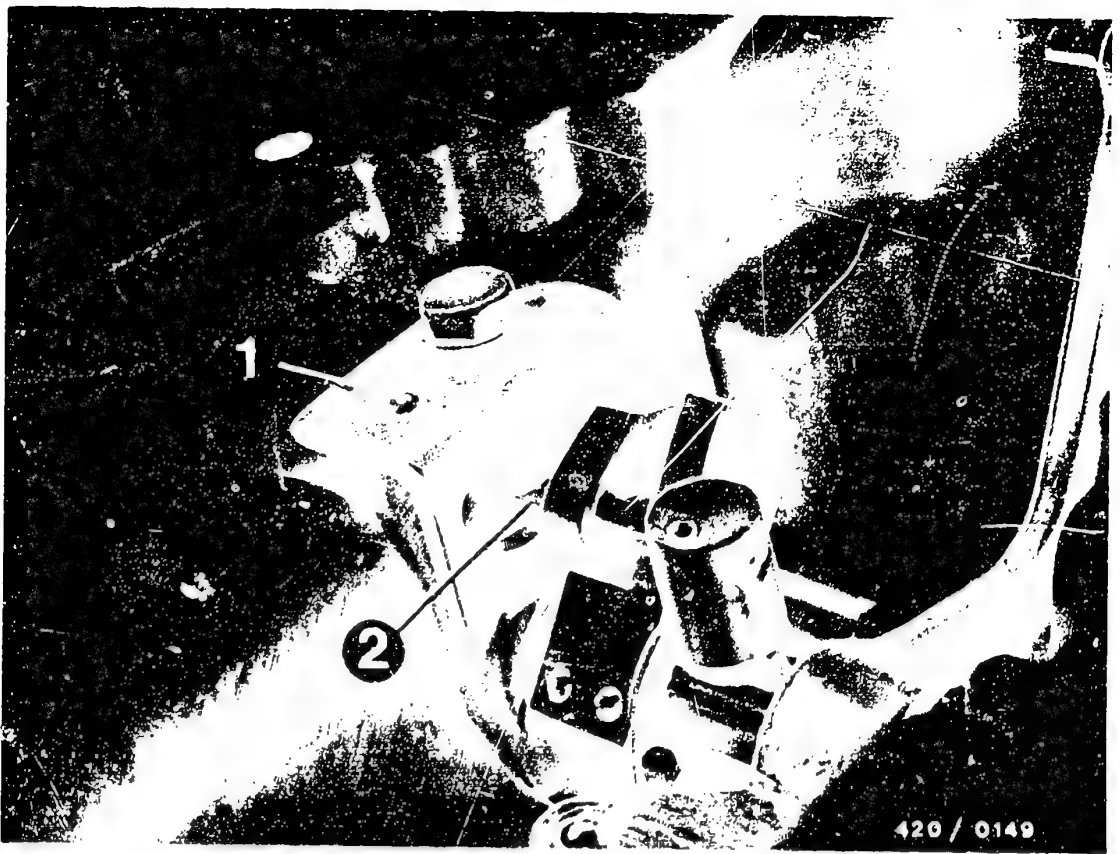
Unscrew locking sleeves and remove spring seats from flyweight assemblies.

**F19**

Checking the components

RQV governors





1 = Coulisse

2 = Pilot

Checking the coulisse (cam plate and pilot)

Check pilot for freedom of movement and accuracy of fit in the coulisse. Also check for scoring, rubbing and wear.

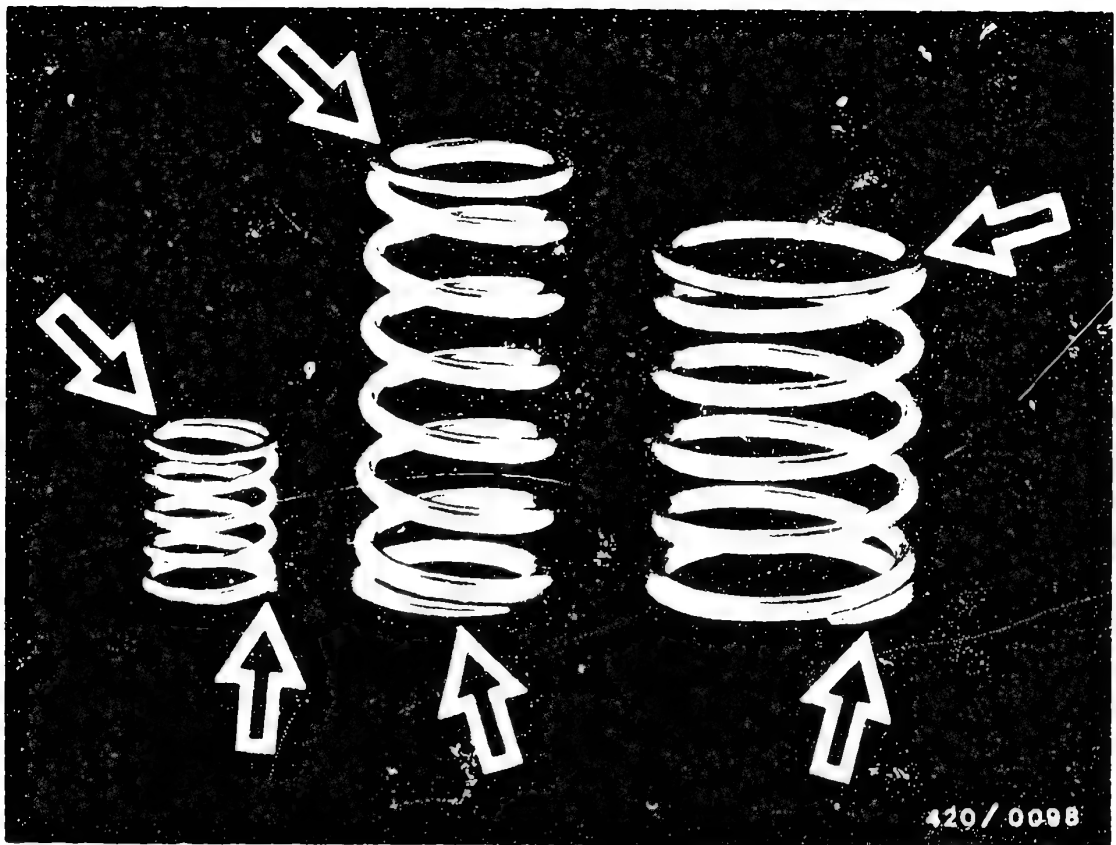
If worn or damaged, replace linkage lever and (or) coulisse.

**F20**

Checking the components

RQV governors





### Checking the governor springs

Governor springs, which are corroded or whose surface is damaged, must be replaced due to the danger of breakage.

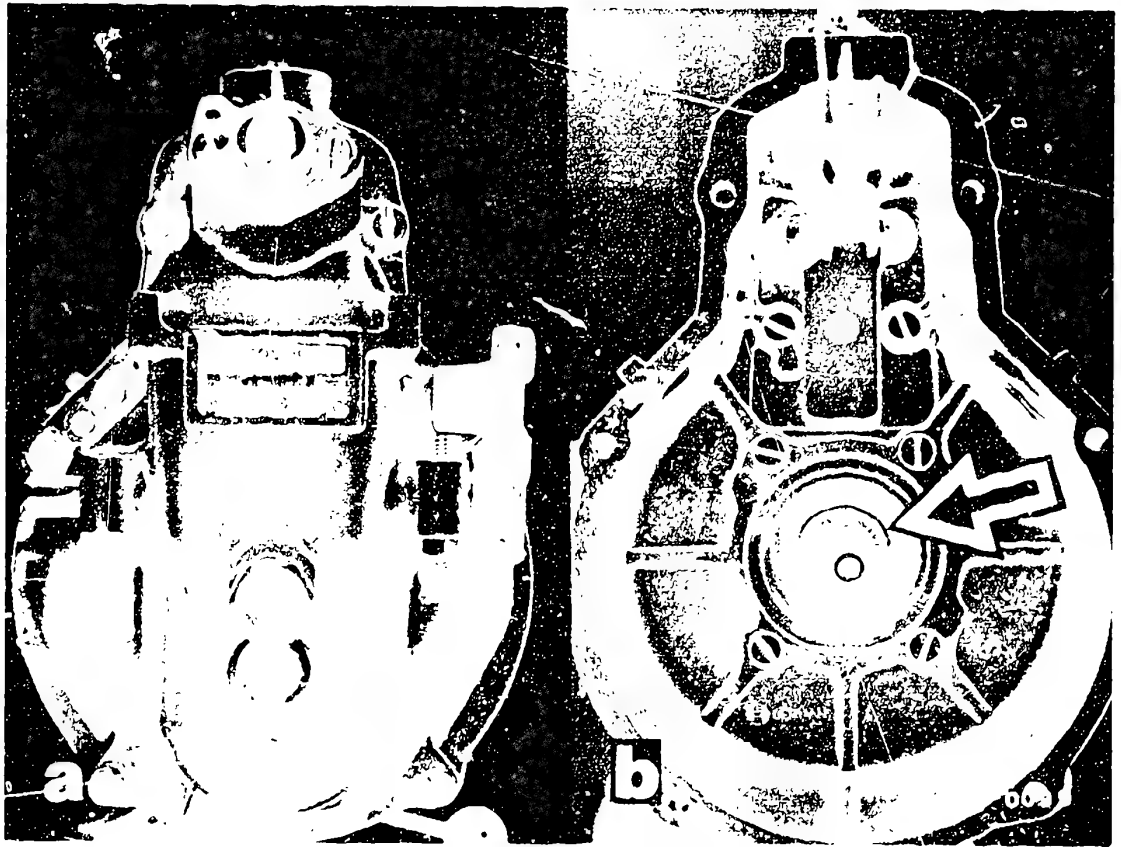
Check in particular the region of the seating surface of the first turn (arrows).

**F21**

Checking the components

RQV governors



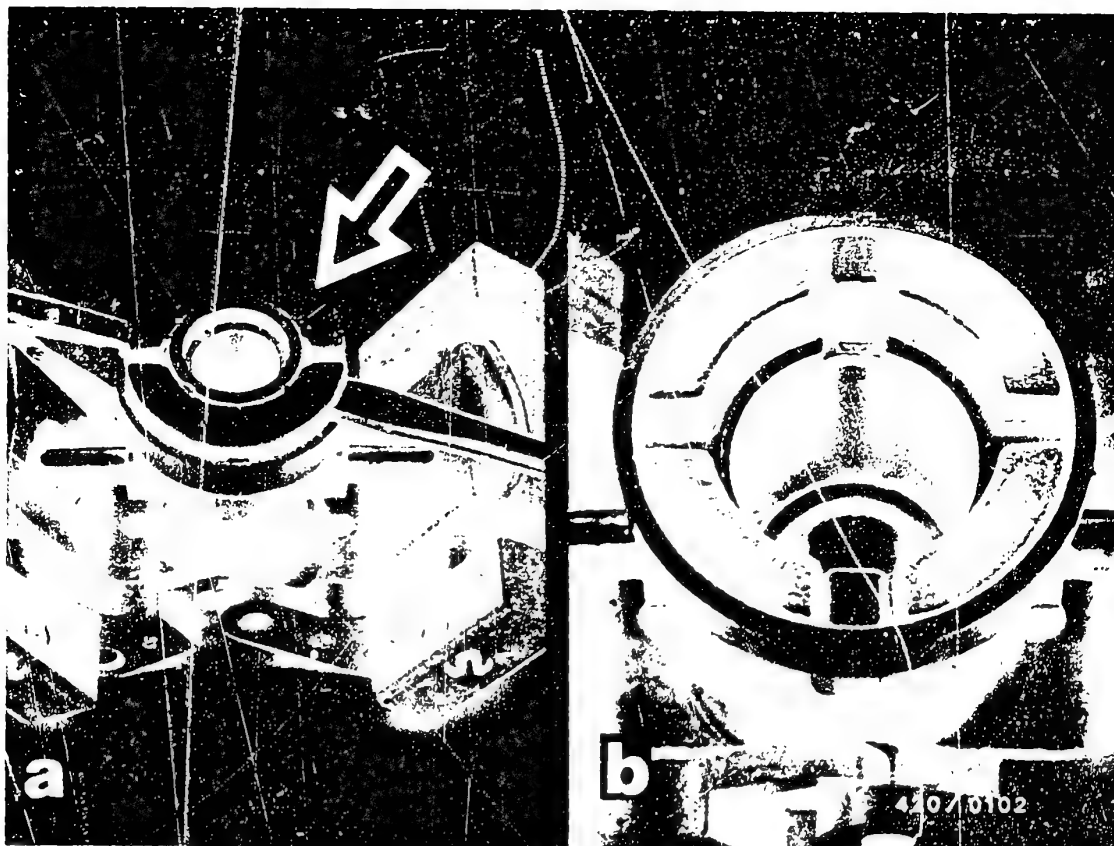


Checking the governor cover and housing

Visually examine the following:

- Threads on stay bolts and inserts
- Camshaft bearing in governor housing for cracks (picture b-arrow)
- Flatness of sealing surfaces.





## 12. REPAIRING RQV GOVERNORS

Using screwdriver, evenly lever out the driver of the governor assembly (picture a-arrow).

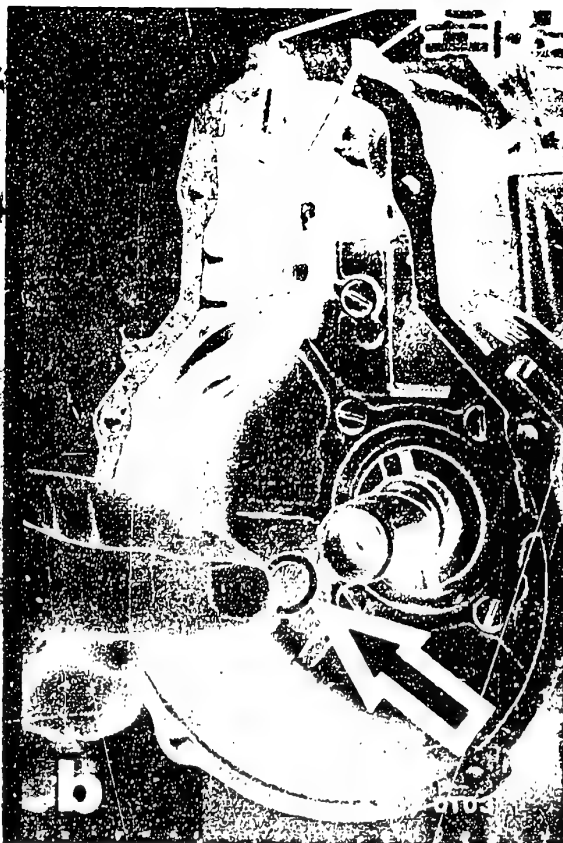
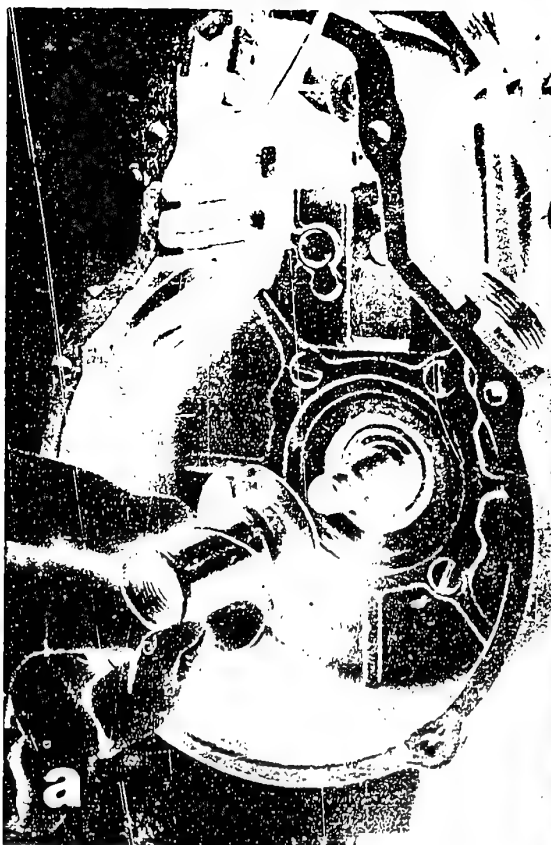
Remove rubber buffers (picture b).

**G1**

Repairing the governor  
RQV governors

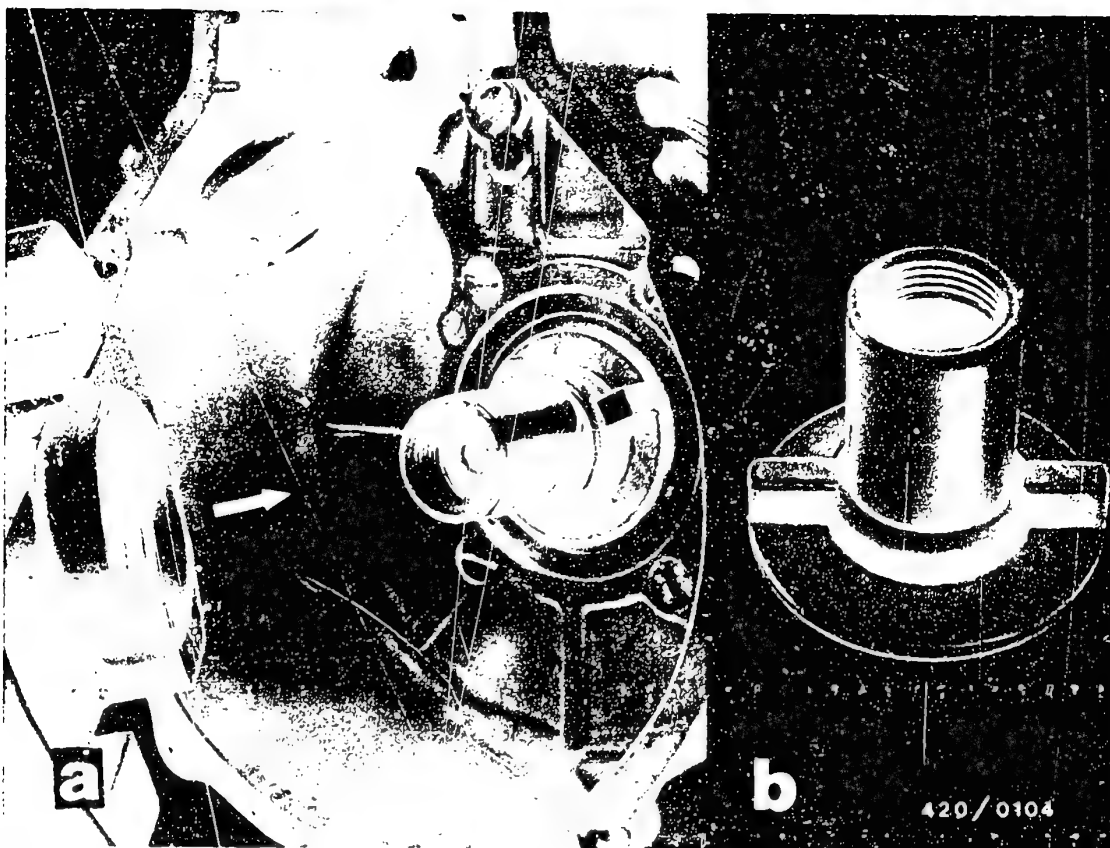






To evaluate the longitudinal play of the governor assembly, slide driver (picture a) onto cone of camshaft. Insert existing shim (picture b-arrow).





Insert governor assembly without rubber buffers (picture a).

Screw on round nut and tighten governor assembly to the specified torque using socket wrench KDEP 2988.

Note:

Tightening torques

Driver with lubricating spiral (picture a): 50...60 Nm

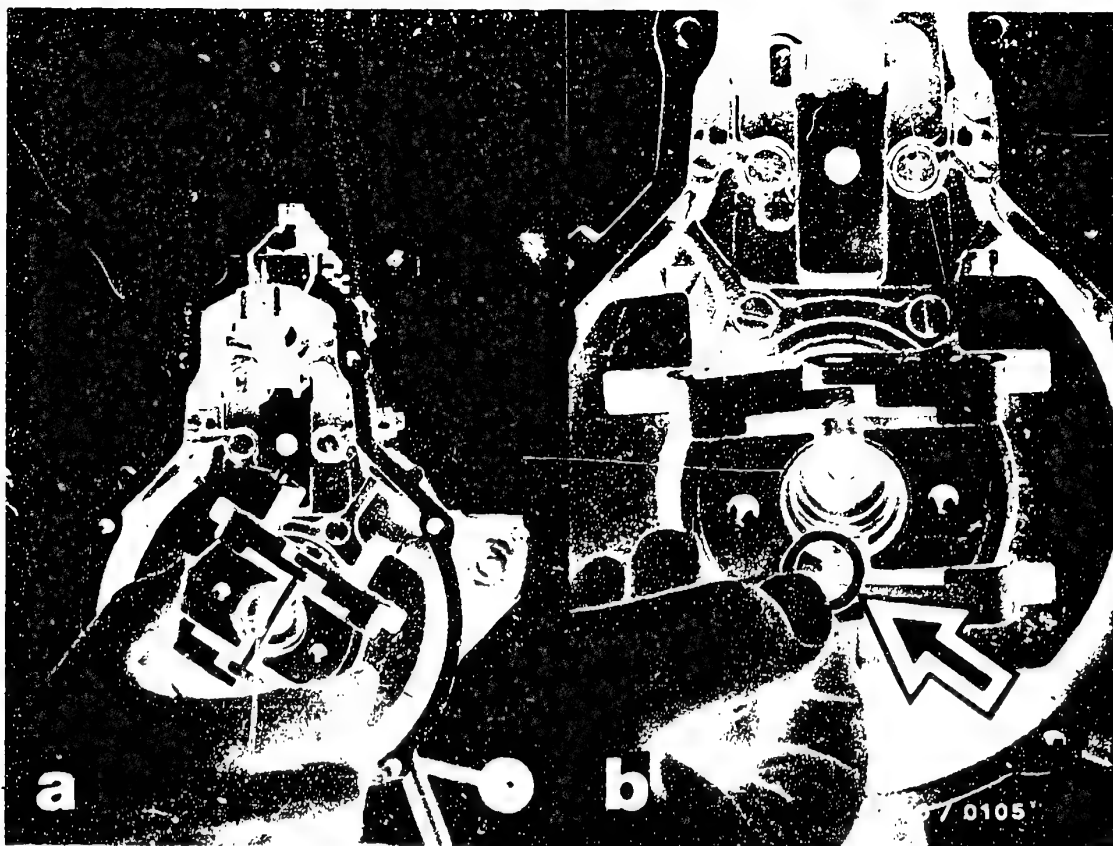
Driver without lubricating spiral (picture b): 65...75 Nm

**G3**

Repairing the governors

RQV governors





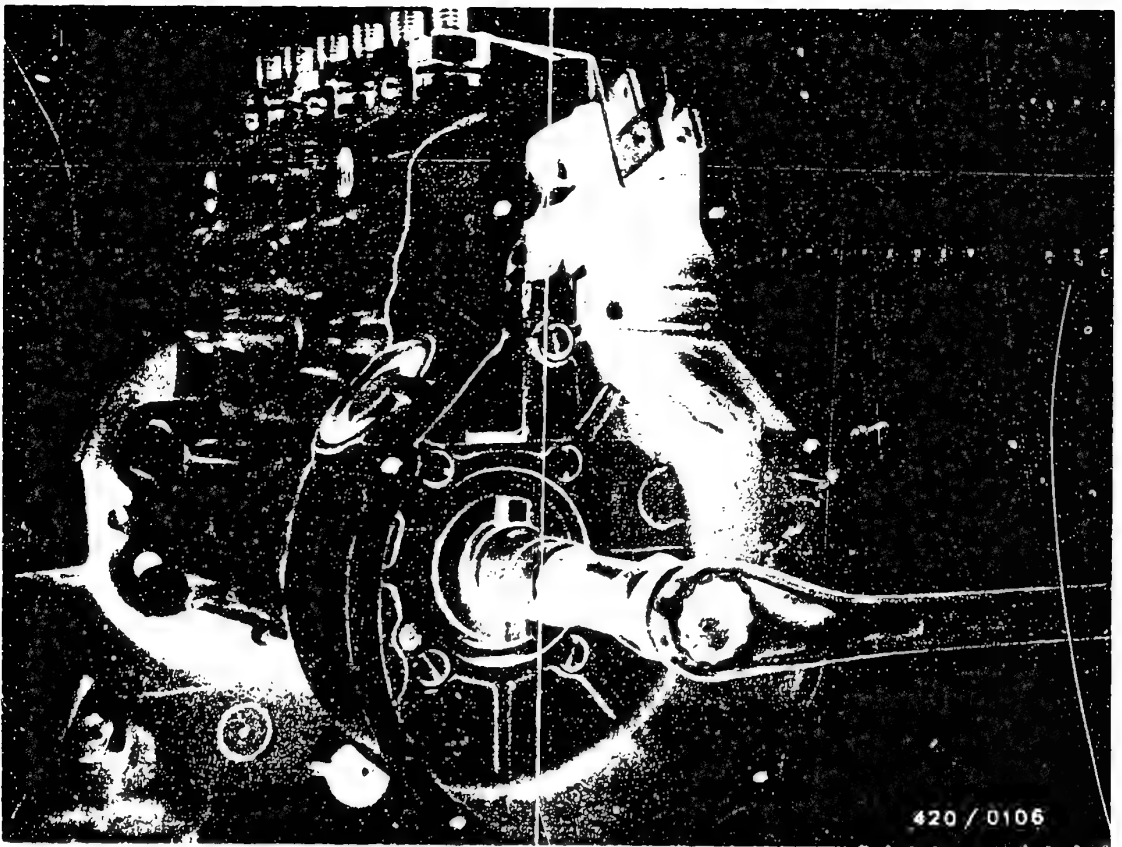
If the longitudinal play is correctly adjusted, it must be possible to turn the governor assembly with resistance, but without it sticking (picture a).

If, on the other hand, the governor assembly is too stiff or too easy to turn, correct the longitudinal play by changing the shim (picture b-arrow).

Note:

Provisionally insert the coupling pin into the governor assembly so that the flyweights do not brush against the governor housing when evaluating the longitudinal play.





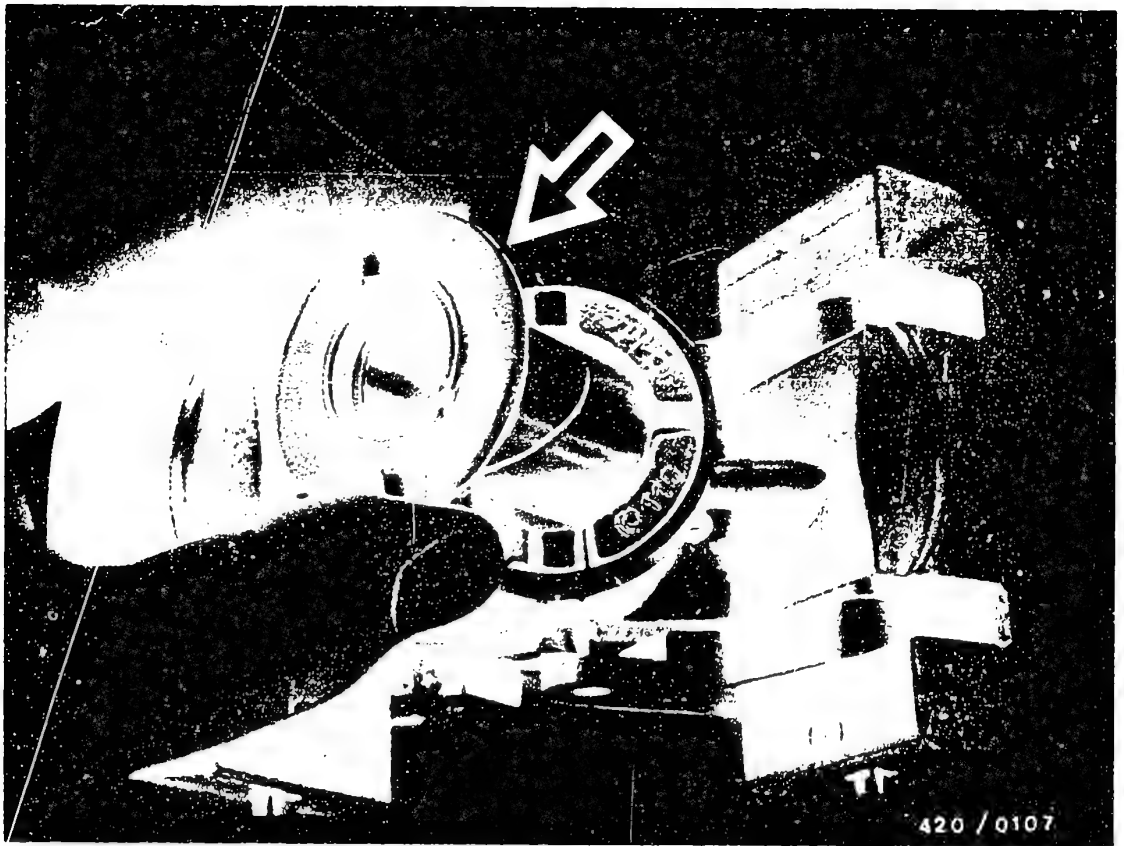
After adjusting the longitudinal play, remove the governor assembly again.

Using puller KDEP 2886, loosen driver from camshaft.

**G5**

Repairing the governor  
RQV governors



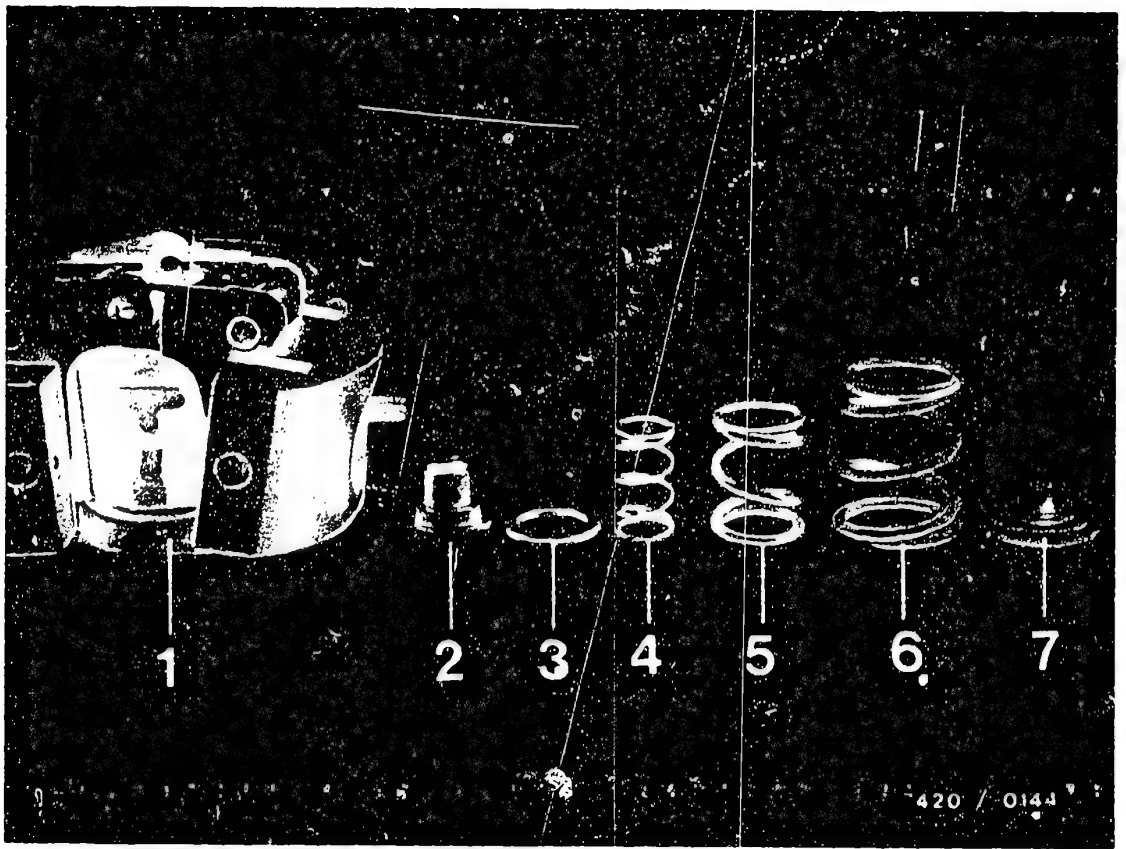


Insert new rubber buffers with grease into governor housing and then press in the driver (arrow).

**G6**

Repairing the governor  
RQV governors





1 = Governor assembly  
 2 = Inner spring seat  
 3 = Shims  
 (if applicable)

4/5 = Max. speed springs  
 6 = Idle spring  
 7 = Outer spring seat

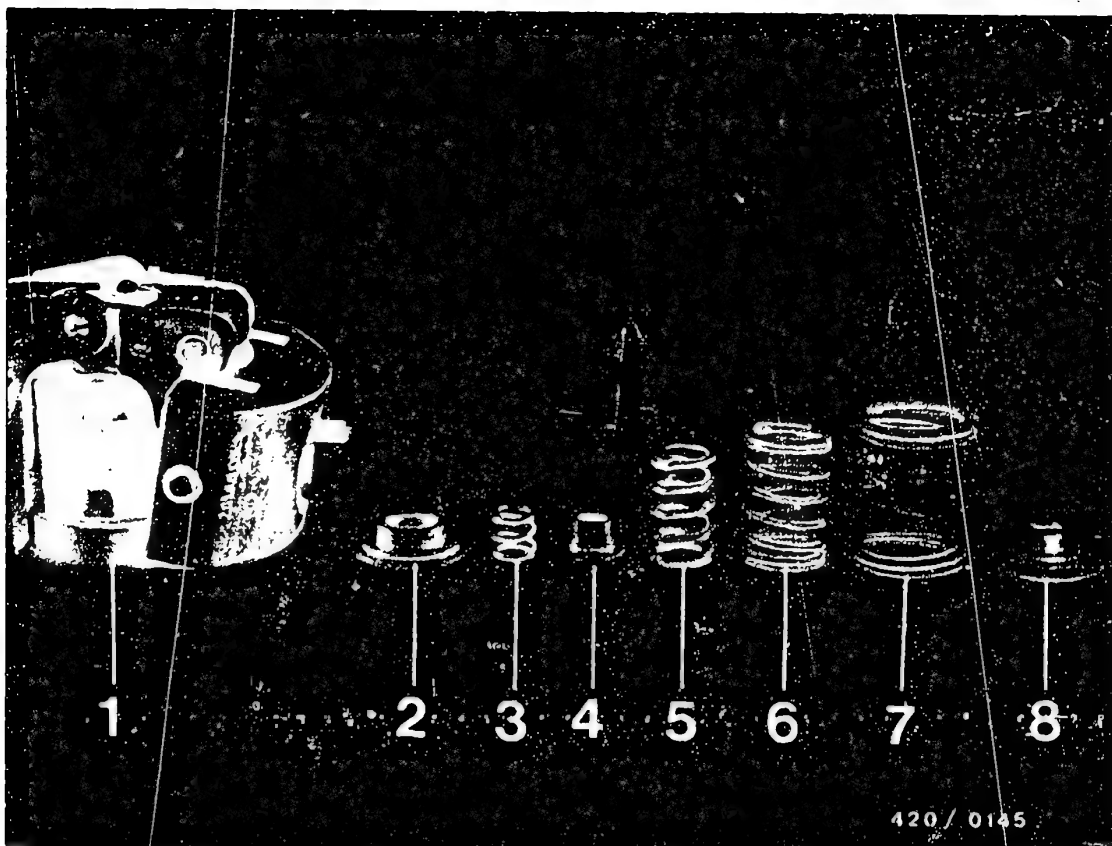
Insert spring seats, governor springs and shims in sequence (picture, Items 2-7) in flyweight assemblies.

**G7**

Repairing the governor

RQV governors





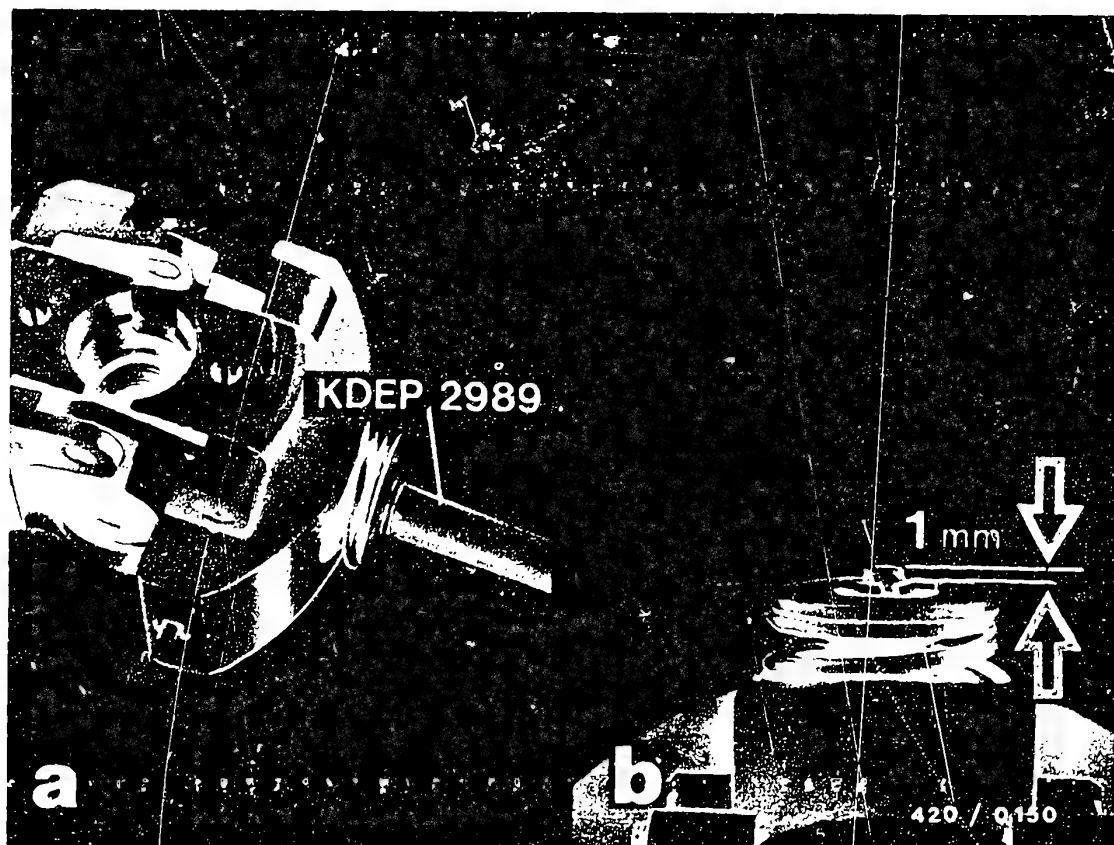
1 = Governor assembly  
 2 = Inner spring seat  
 3 = Aux. max. speed spring  
 4 = Spring retainer

5/6 = Max. speed springs  
 7 = Idle spring  
 8 = Outer spring seat

Governor assembly with auxiliary max. speed spring

Insert spring seats/retainer and governor springs in sequence (picture, Items 2-8) in flyweight assemblies.





Using pin-type socket wrench KDEP 2989, screw round nut onto threaded pin of governor assembly (picture a).

Set a presetting dimension of 1 mm between threaded pin and round nut (picture b).

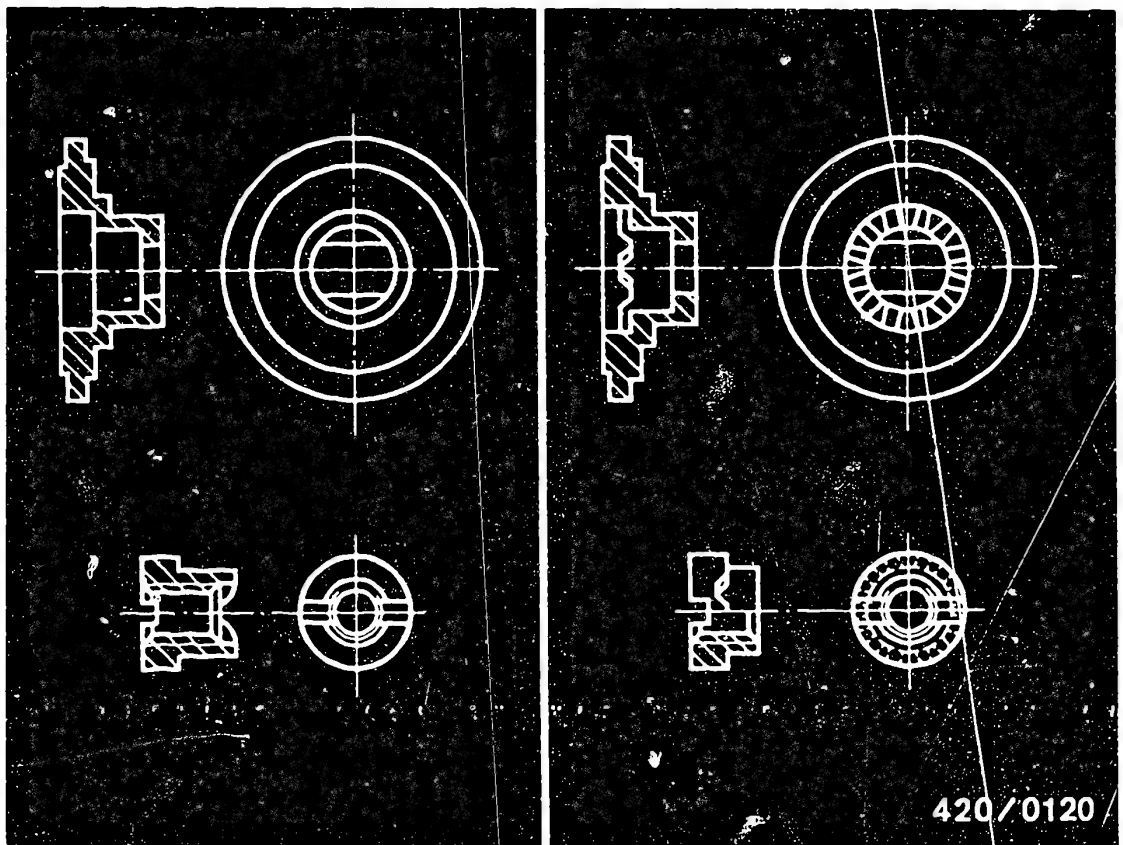
See note on next page regarding upper spring seat and round nut.

**G9**

Repairing the governor  
RQV governors







420/0120/

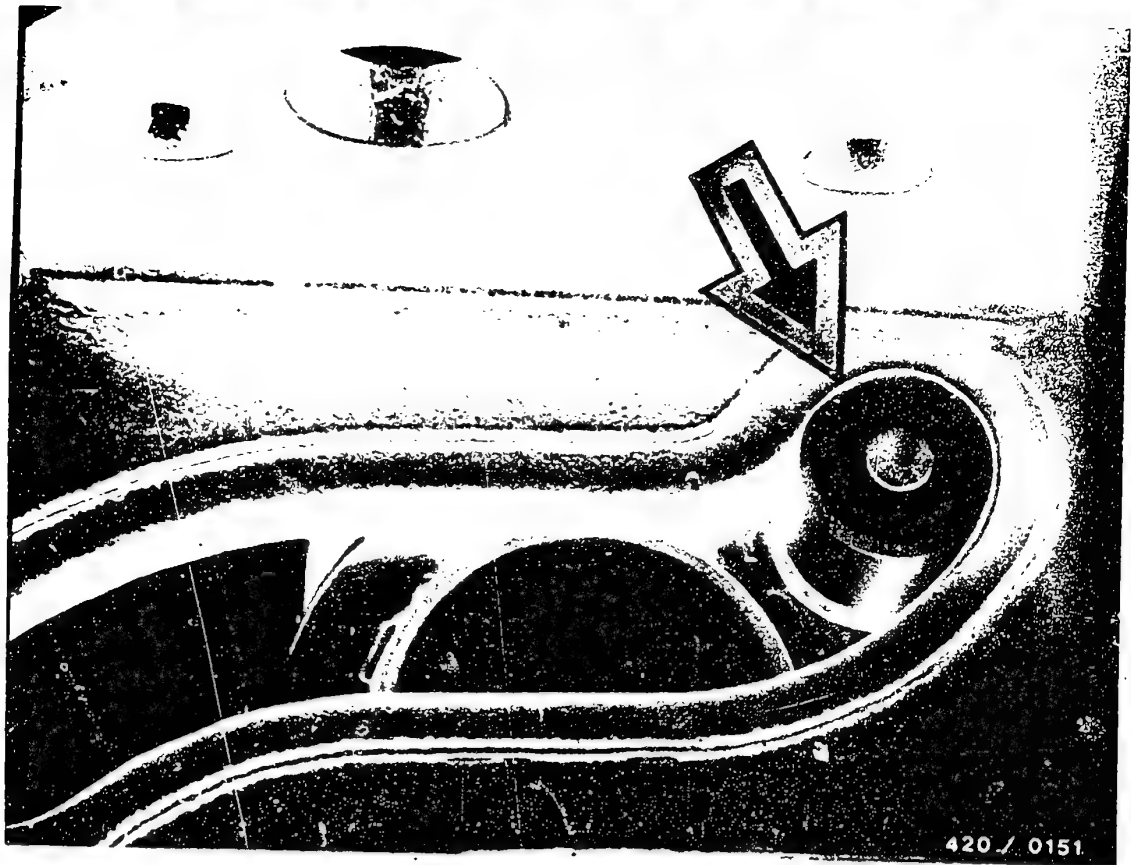
	<u>Old</u>	<u>New</u>
Spring seat	1 420 520 002	2 420 520 001
Spring seat	1 420 520 003	2 420 520 002
Round nut	1 423 345 020	2 423 345 005

To limit the play and for increased accuracy of adjustment, the upper spring seat and the round nut have been provided with closely stepped notches.

Old and new versions must not be installed together.

Spring seat and round nut must always be of the same version.





Checking and adjusting the clearance dimension of the coulisse (cam plate)

Turn control lever on setting shaft so that maximum-speed stop is not in contact.

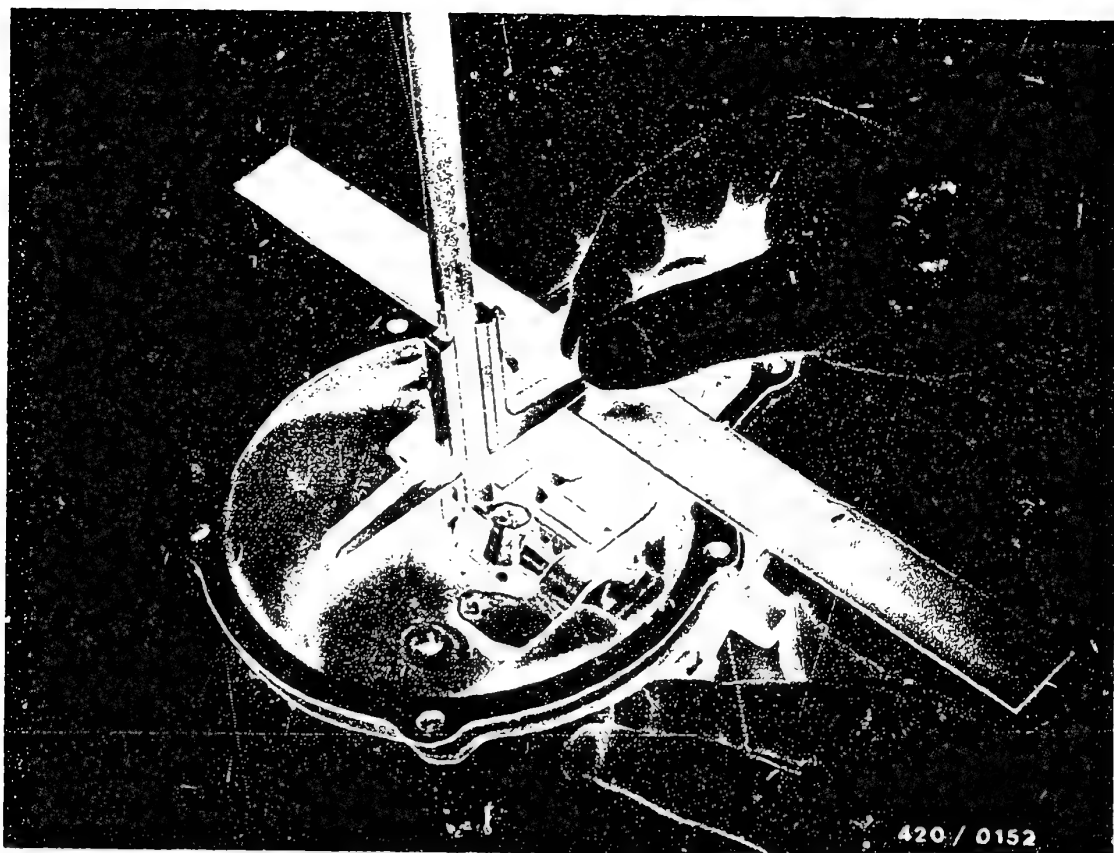
Press control lever in full-load direction until the pilot of the linkage lever is up against the end of the cam path (arrow).

**G11**

Repairing the governor

RQV governors





Put on new seal and straightedge.

Using depth gauge, measure from straight edge to pilot.

The clearance dimension is the measured dimension minus the thickness of the straightedge plus 3 mm (half pilot diameter).

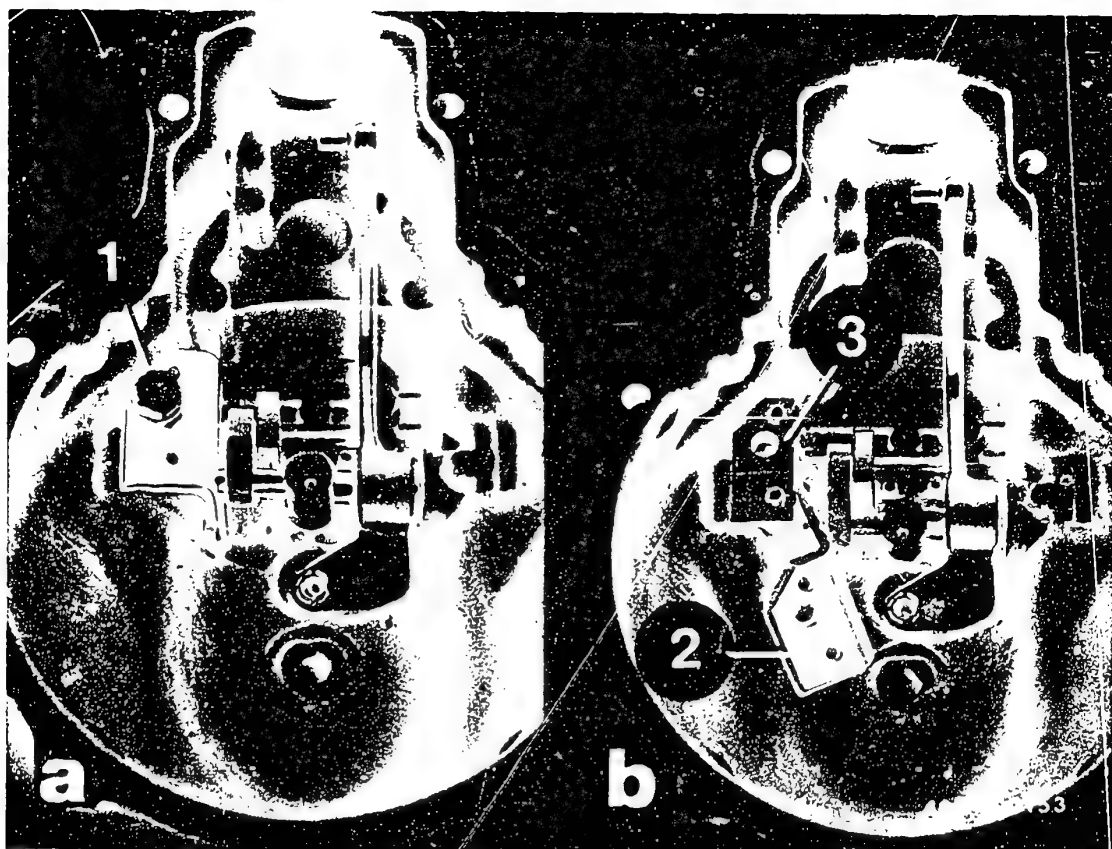
Specification: 24.4...24.6 mm

**G12**

Repairing the governor

RQV governors





1 = Hexagon screw  
2 = Coulisse (cam plate)

3 = Intermediate plate

If the clearance dimension is not within the stated tolerance, unscrew hexagon screw (picture a).

Take off coulisse and adjust dimension by changing the intermediate plate (picture b).

Put on coulisse and tighten hexagon screw to 6...8 Nm.

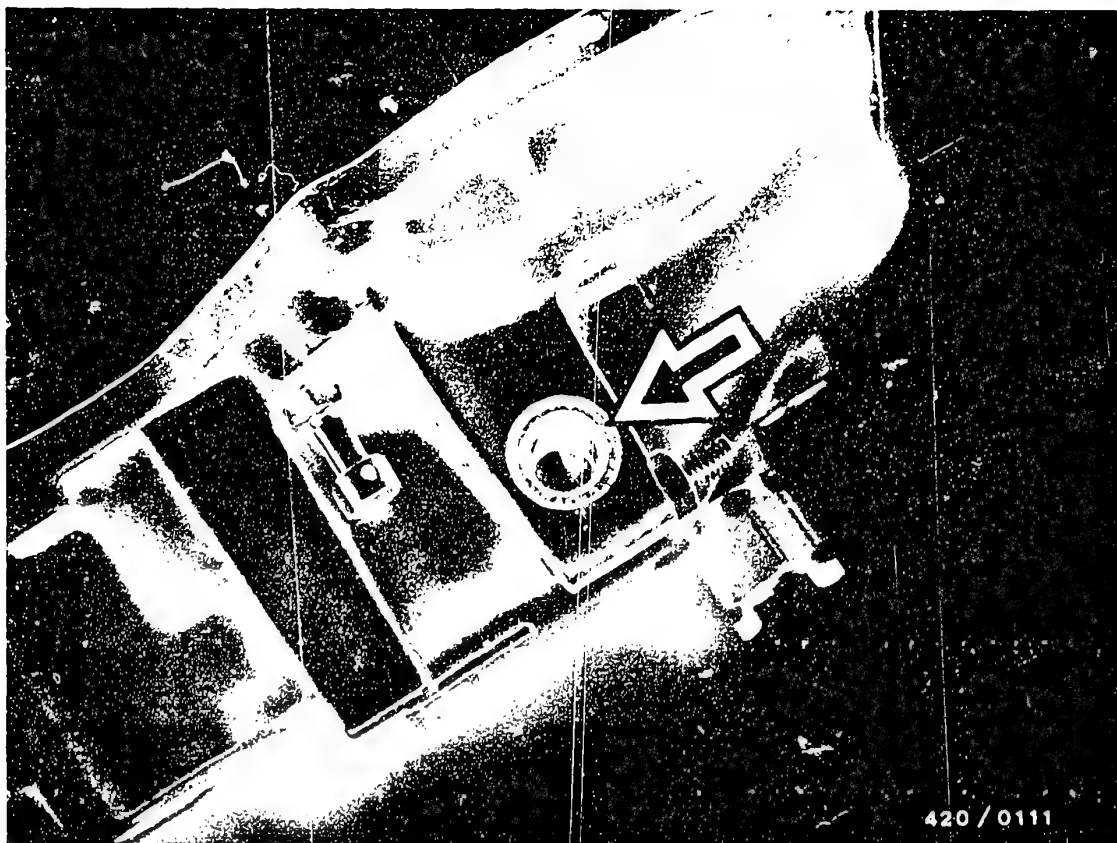
Repeat measurement.

**G13**

Repairing the governor

RQV governors





The following operations are to be performed only in case of:

- Worn bearing bushings of control-lever shaft
- Control-lever shaft worn or sticking
- Damage to guide block, cam plate and linkage lever

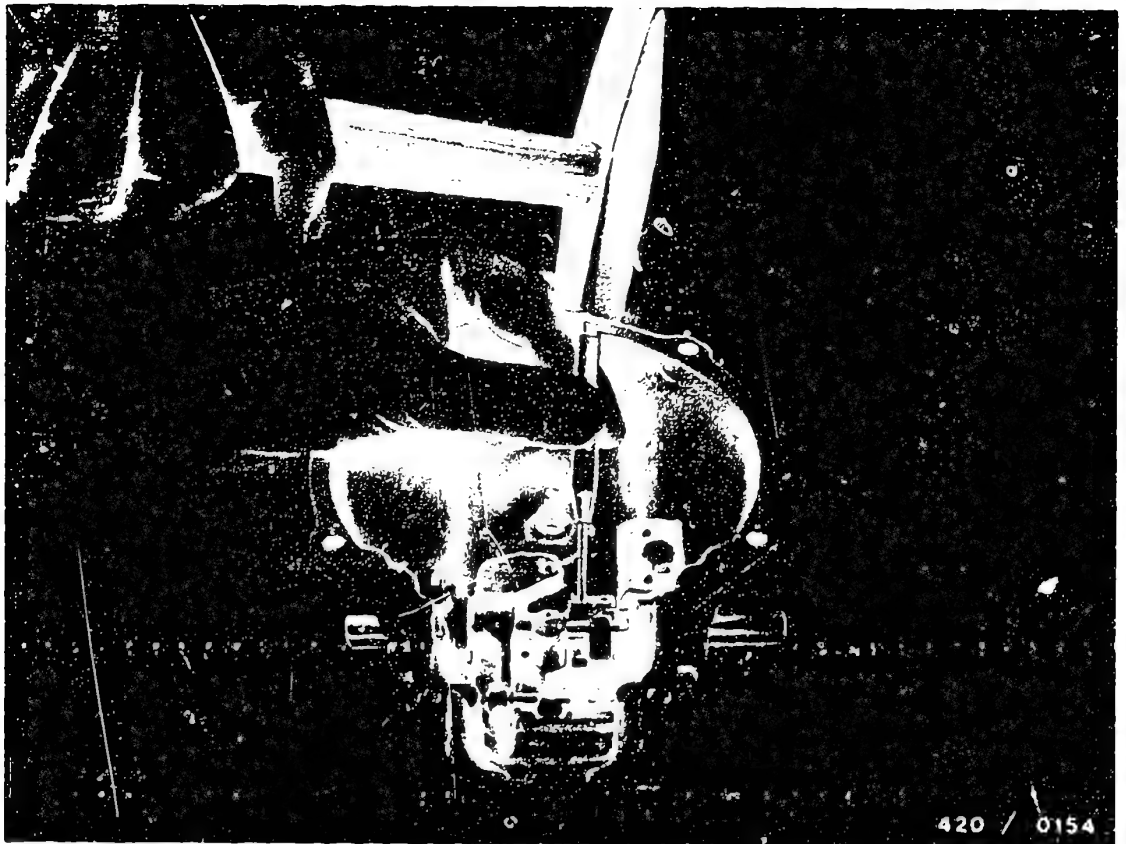
Note:

Always replace radial-lip-type oil seals of control-lever shaft (arrow).

**G14**

Repairing the governor  
RQV governors





Position linkage lever so that the knocking-out side of the taper pins is pointing upward.

Knock out taper pins (as can be seen in picture).

Remove coulisse (cam plate).

Pull setting shaft out of the governor cover.

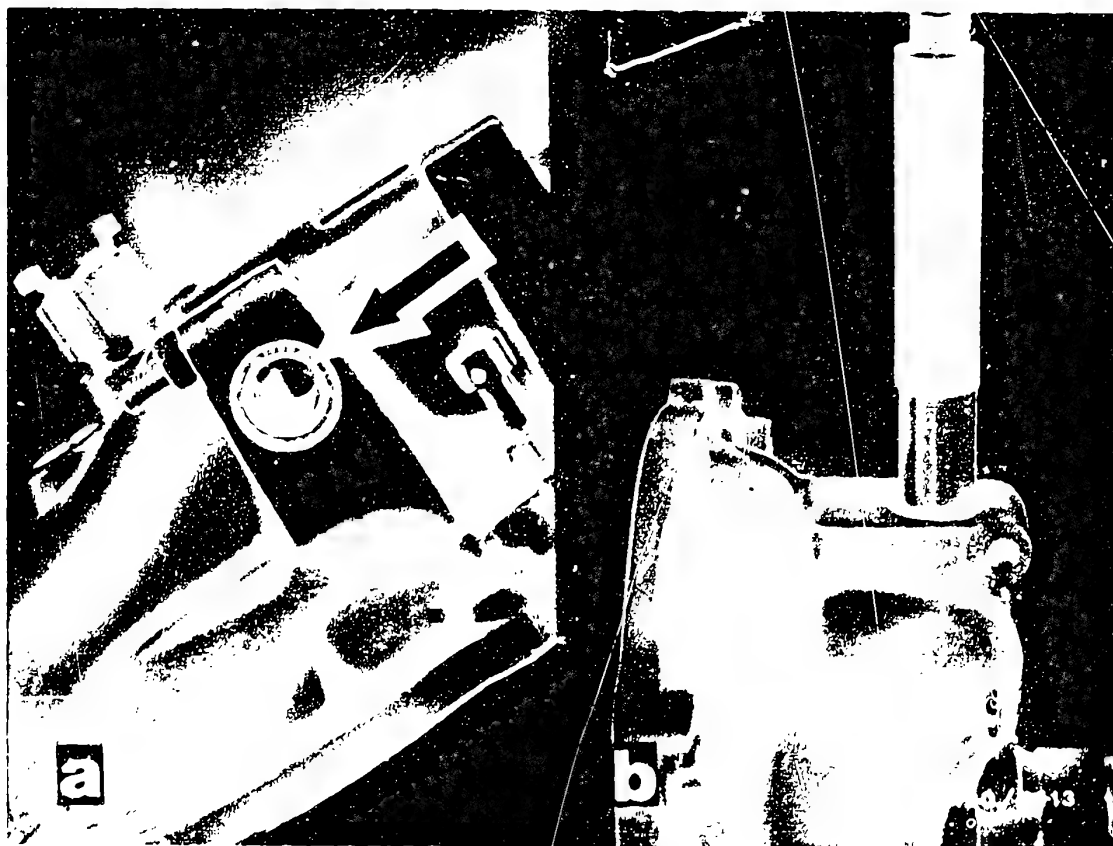
Remove control lever.

**G 15**

Repairing the governor

RQV governors





Remove radial-lip-type oil seals (picture a-arrow).

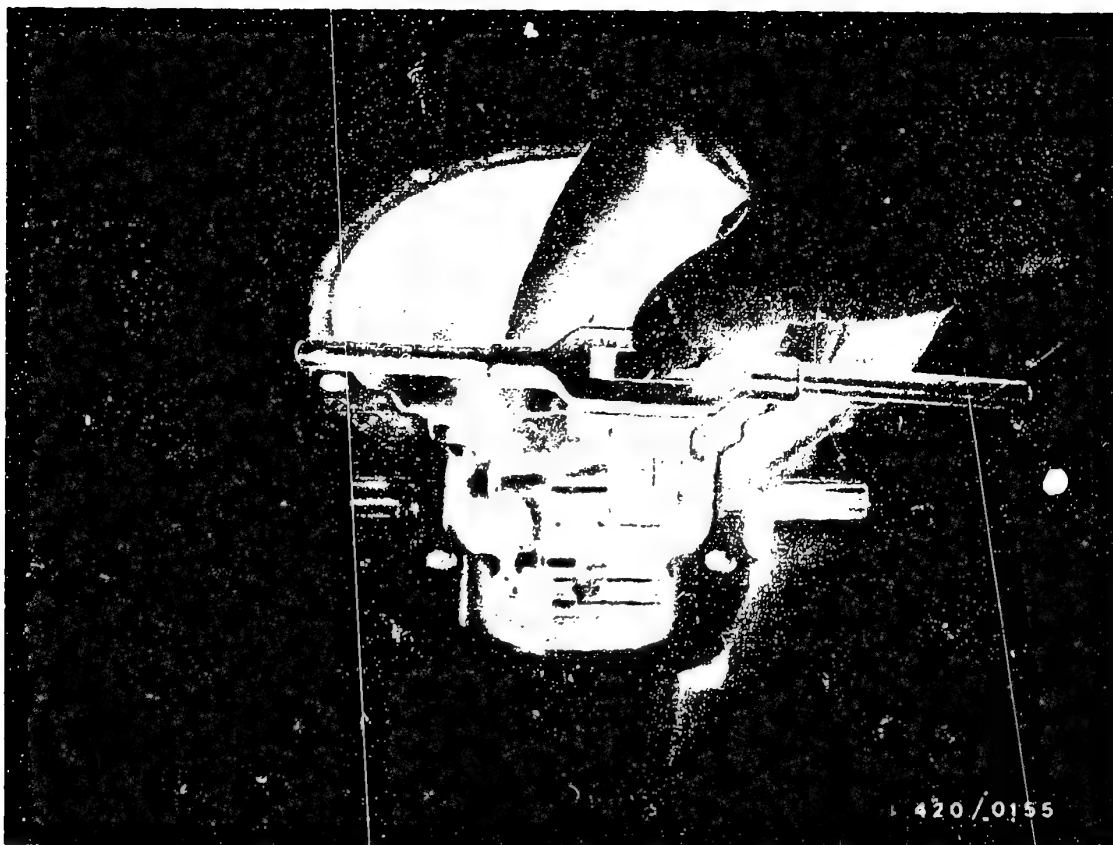
Using mandrel KDEP 1584, press out bearing bushings (picture b).

When pressing out, put support under governor cover on the opposite side.

Press in new bearing bushings, also using mandrel KDEP 1584.

Insert radial-lip-type oil seals.





Introduce setting shaft on one side in governor cover.

Slide on linkage lever with intermediate plate and then slide setting shaft through entirely.

Join linkage lever to setting shaft by knocking in the taper pins.

Check freedom of movement of setting shaft.

Insert coulisse and tighten fastening screw to 6...8 Nm.

Mount control lever.

Note:

If using a new setting shaft, ream the locating holes with reamer (see picture).

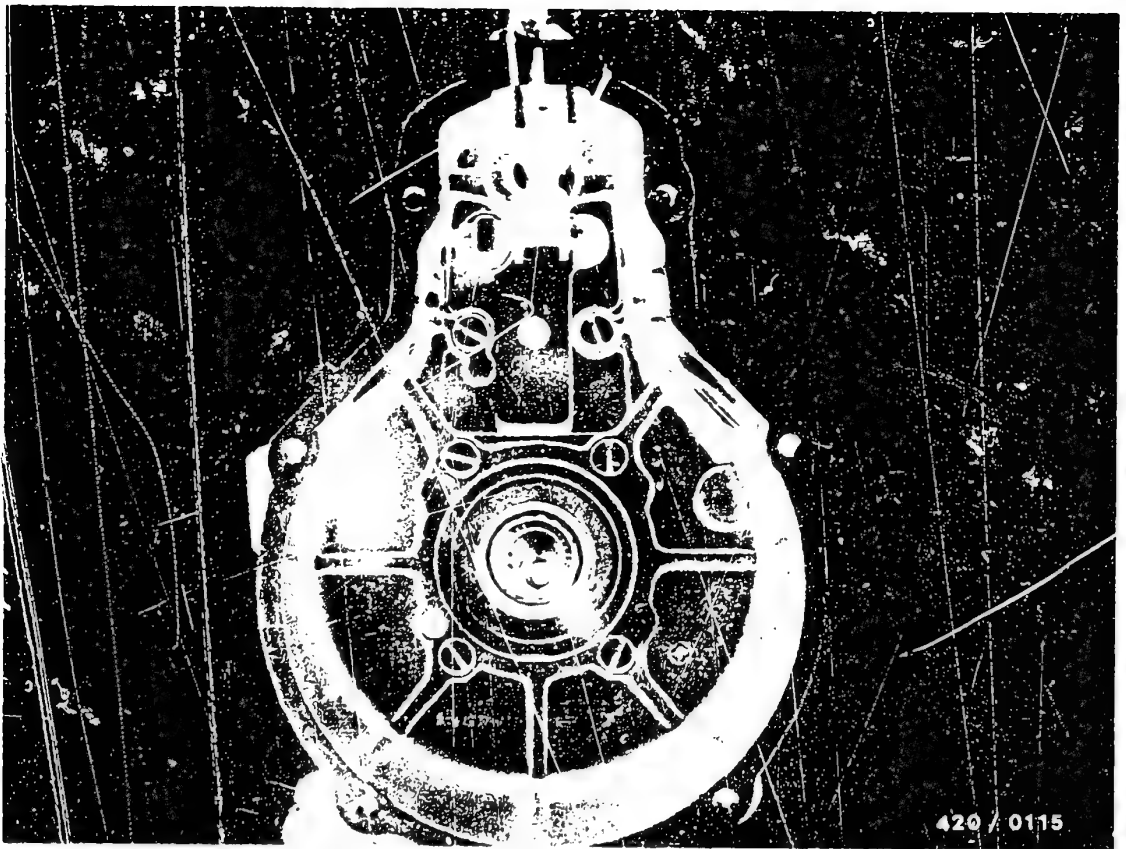
**G17**

Repairing governor

RQV governors







### 13. ASSEMBLING RQV GOVERNORS

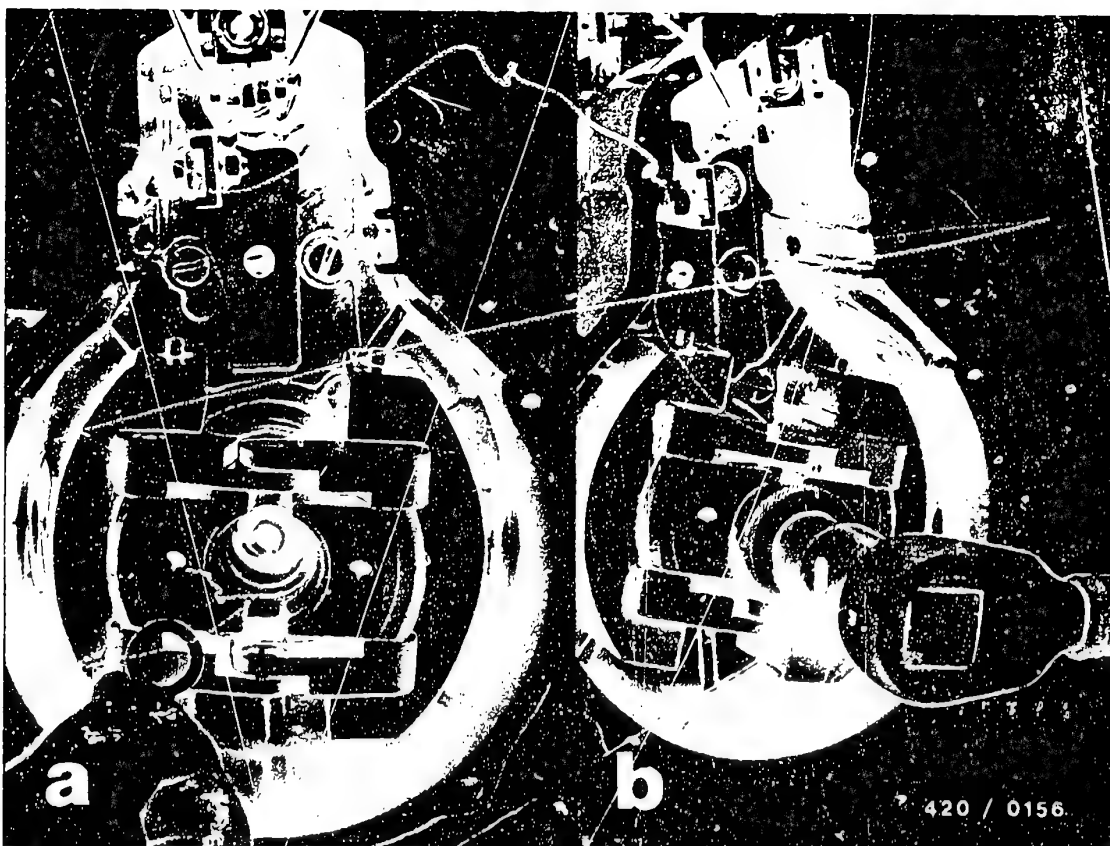
In the following operations, use only components which have been cleaned and which are not worn or damaged.

Replace flat flange gaskets and tab washers.

**H1**

Assembling the governor  
RQV governors





Slide governor assembly onto camshaft cone.

Insert appropriate longitudinal play shim (picture a - arrow).

Screw on round nut and, using socket wrench KDEP 2988, tighten governor assembly to the specified torque (picture b).

Note:

Tightening torques:

Driver with lubricating spiral: 50...60 Nm

Driver without lubricating spiral: 65...75 Nm

**H2**

Assembling the governor

RQV governors



After tightening, check freedom of movement of governor assembly. To do this, lock flyweights with screwdriver and turn camshaft.

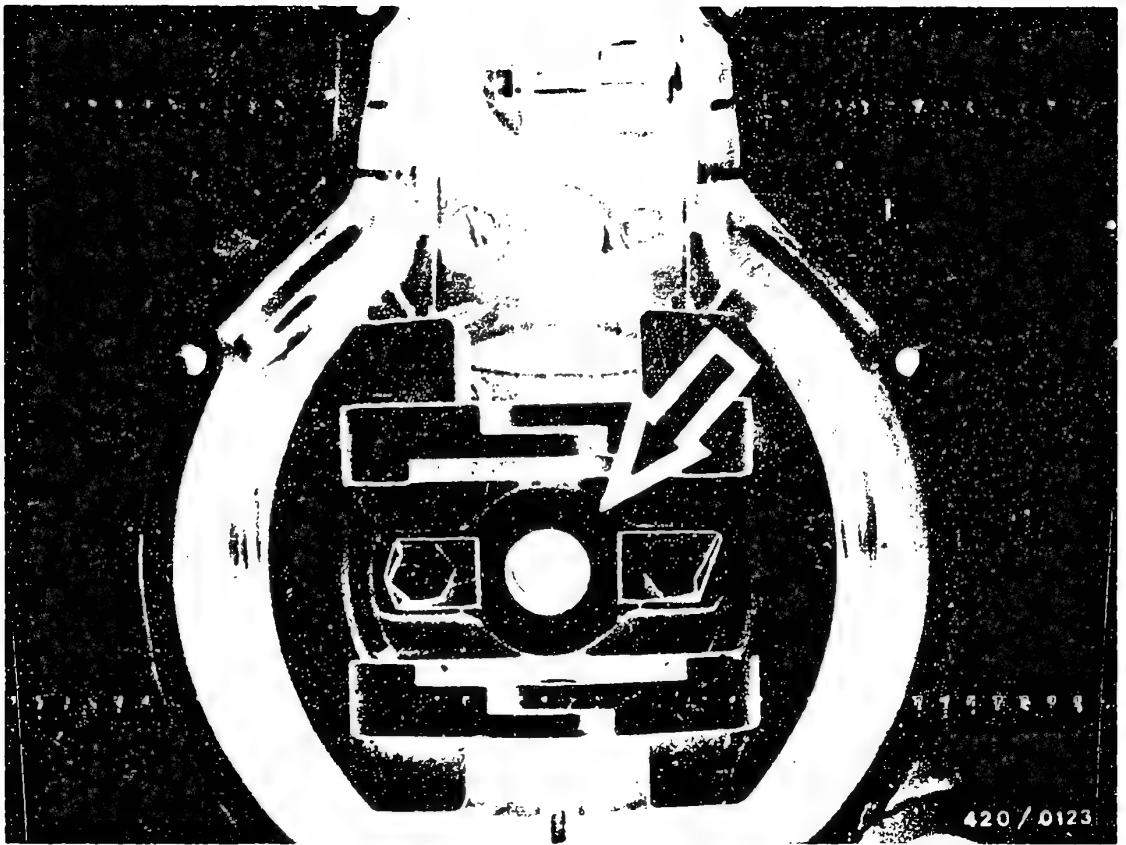
If camshaft cannot be turned, repeat adjustment of longitudinal play of governor assembly.

**H3**

Assembling the governor

RQV governors





Insert guide bushing (arrow) in governor assembly.

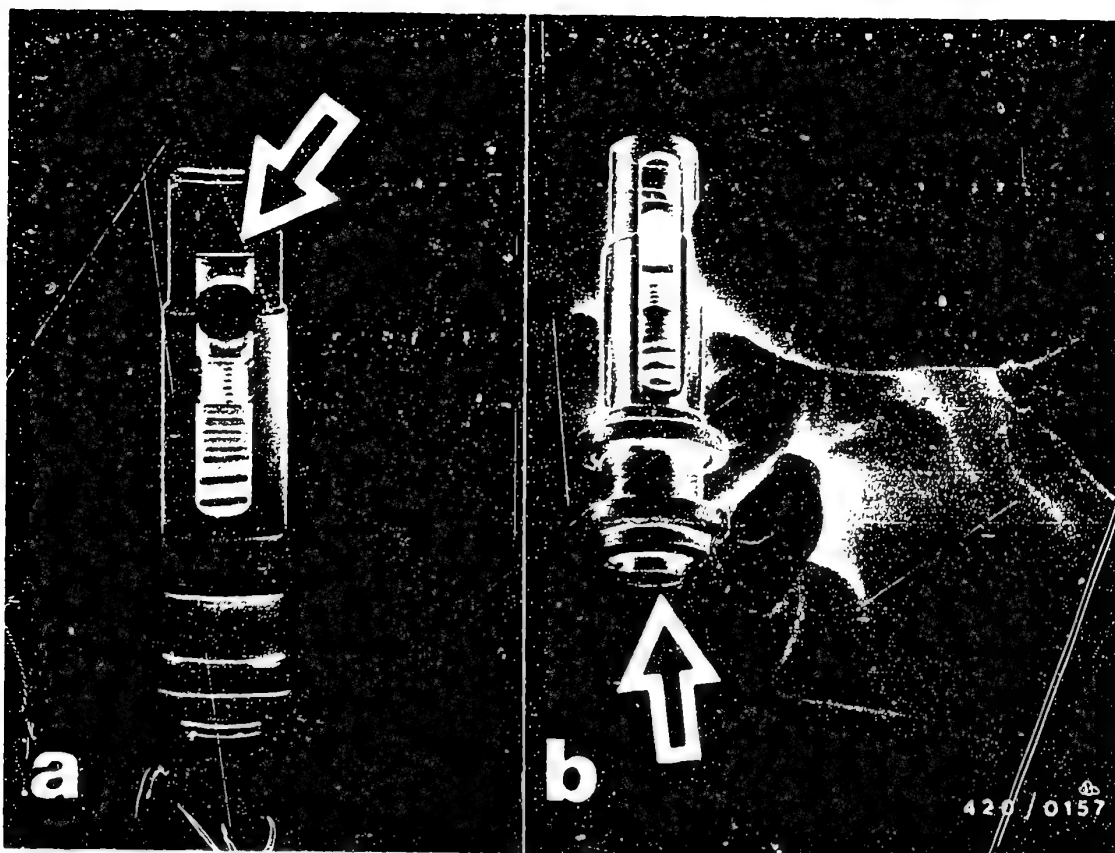
Tighten fastening screws to 6...8 Nm and secure against coming loose by bending over the tab washers.

**H4**

Assembling the governor

RQV governors





Note:

Before installing the spring-loaded bearing pin, check adjusting screw (picture a-arrow) for zero play.

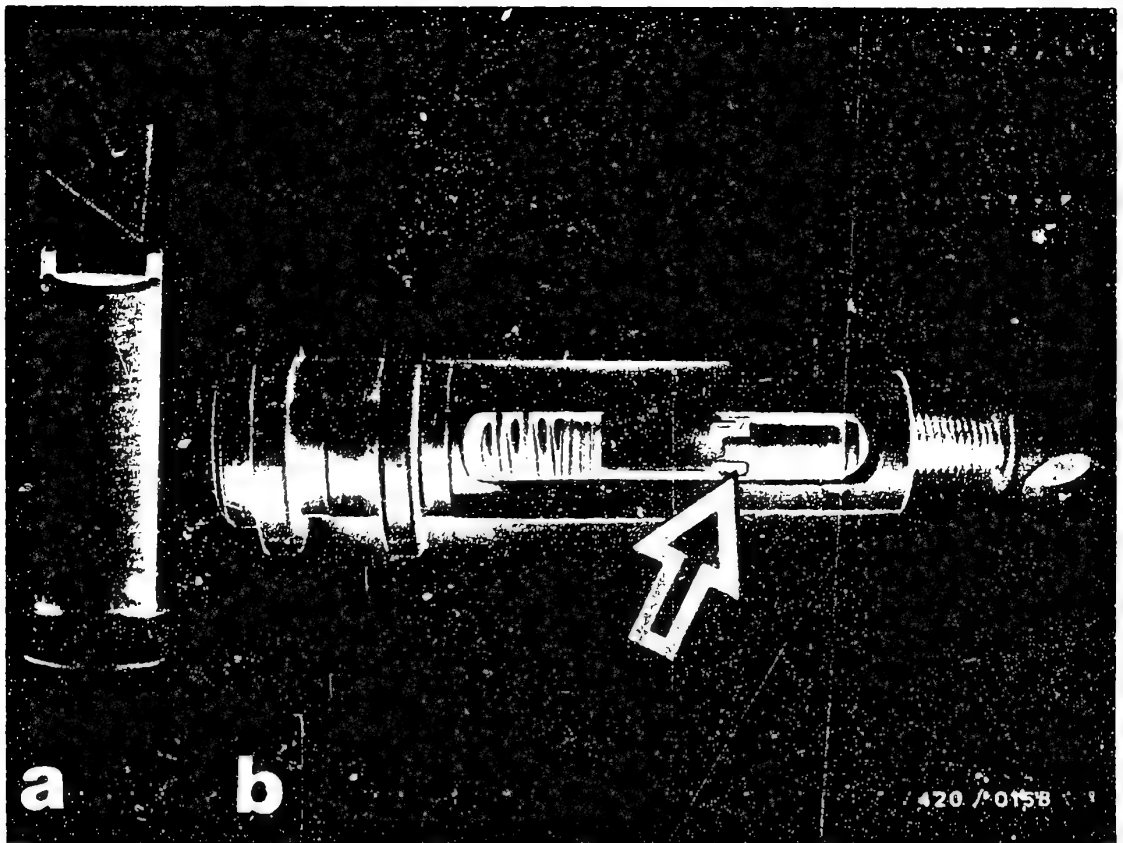
Play can be detected by pressing on the screw sleeve (picture b-arrow) or by checking for noise (shaking the bearing pin).

If there is play, hold bearing pin slightly slanted and unscrew adjusting screw until the screw sleeve leaves the bearing pin.

**H5**

Assembling the governor  
RQV governors





Slightly turn screw sleeve so that the spigots (picture a-arrow) engage other recesses in the slotted sleeve (picture b-arrow).

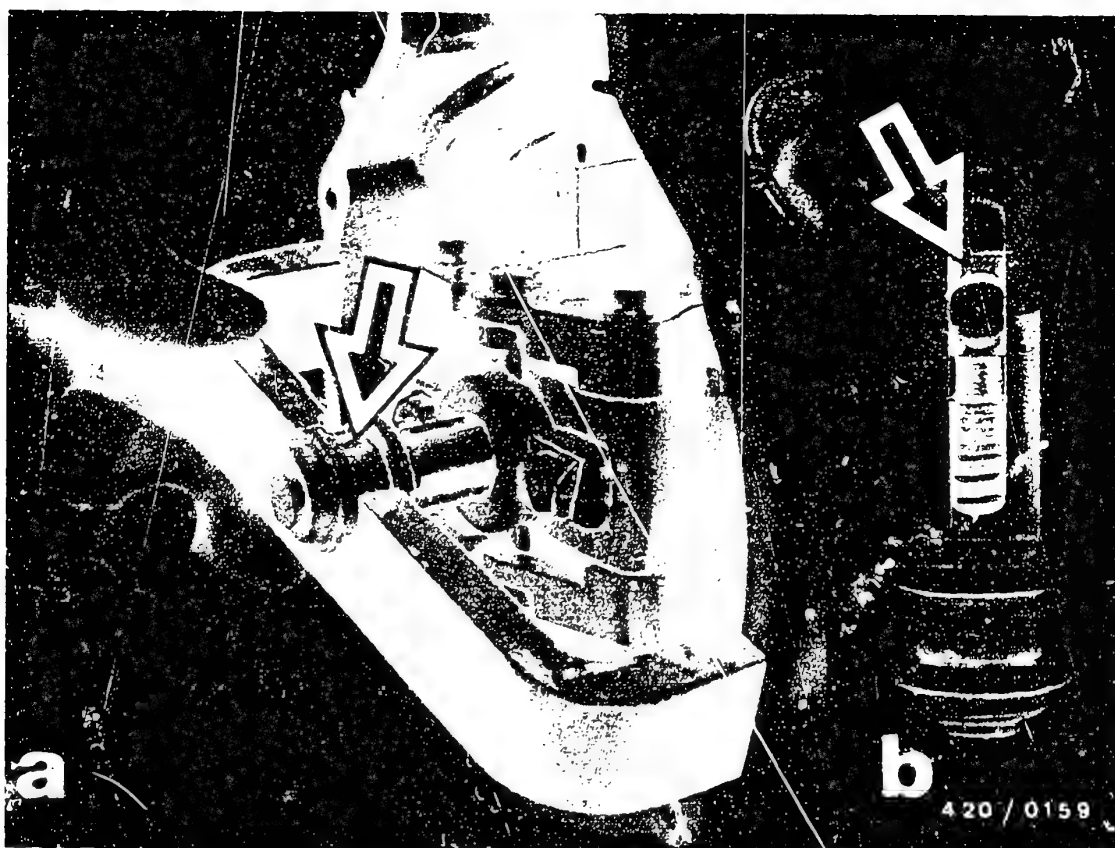
Screw adjusting screw into screw sleeve.

If necessary, repeat adjustment until there is no more play.

**H6**

Assembling the governor  
RQV governors





### Adjusting the slider dimension

Insert bearing pin in guide bushing.

Stick coupling pin through bell crank and bearing pin.

Adjust slider dimension with measuring shackle 1 682 329 038. If adjustment is correct, measuring shackle must engage the slider guide in the bearing pin (picture a-arrow).

To adjust, remove coupling pin and bearing pin from governor assembly.

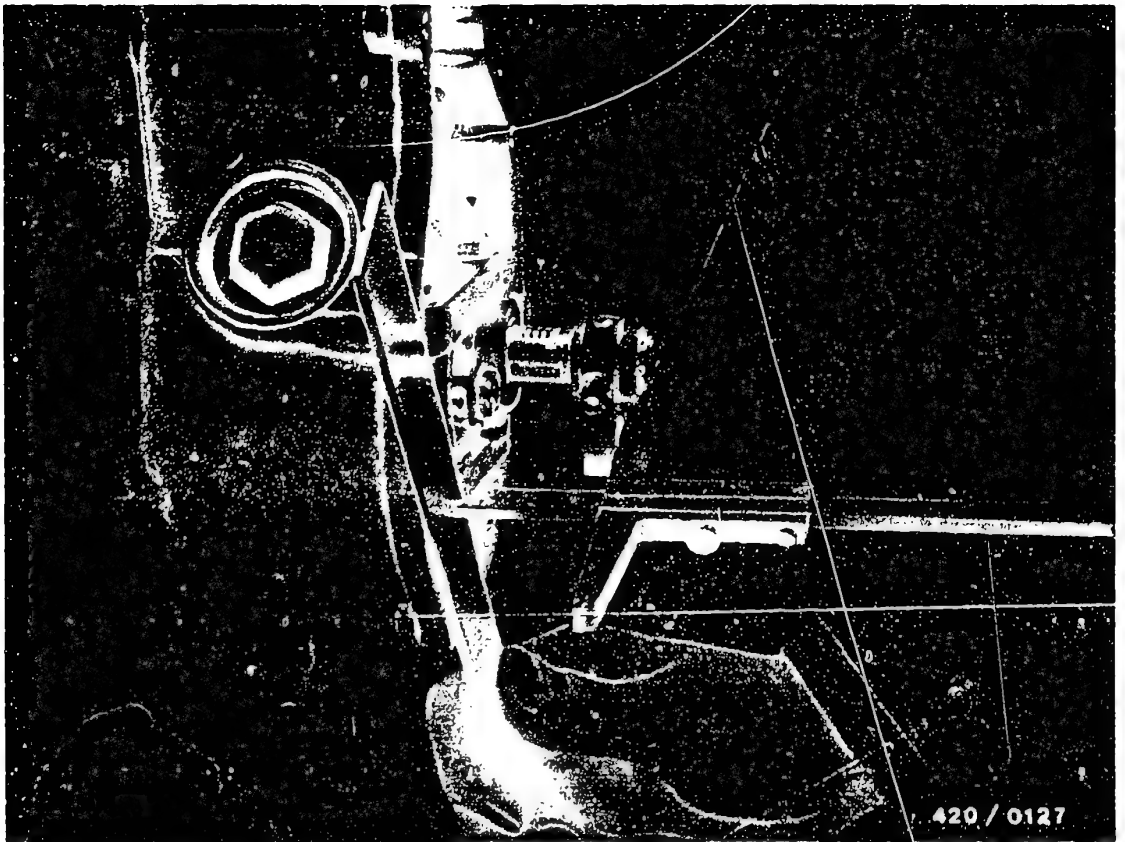
Adjust slider dimension by turning the adjusting screw (picture b-arrow).

**H7**

Assembling the governor

RQV governors





To establish the slider dimension without measuring shackle, lay straightedge on governor housing and, using depth gauge, measure distance between slider and straightedge (picture).

The slider dimension is the measured dimension plus the thickness of the straightedge minus half the thickness of the slider.

Specification: 34.9...35.1 mm (without seal)

Note:

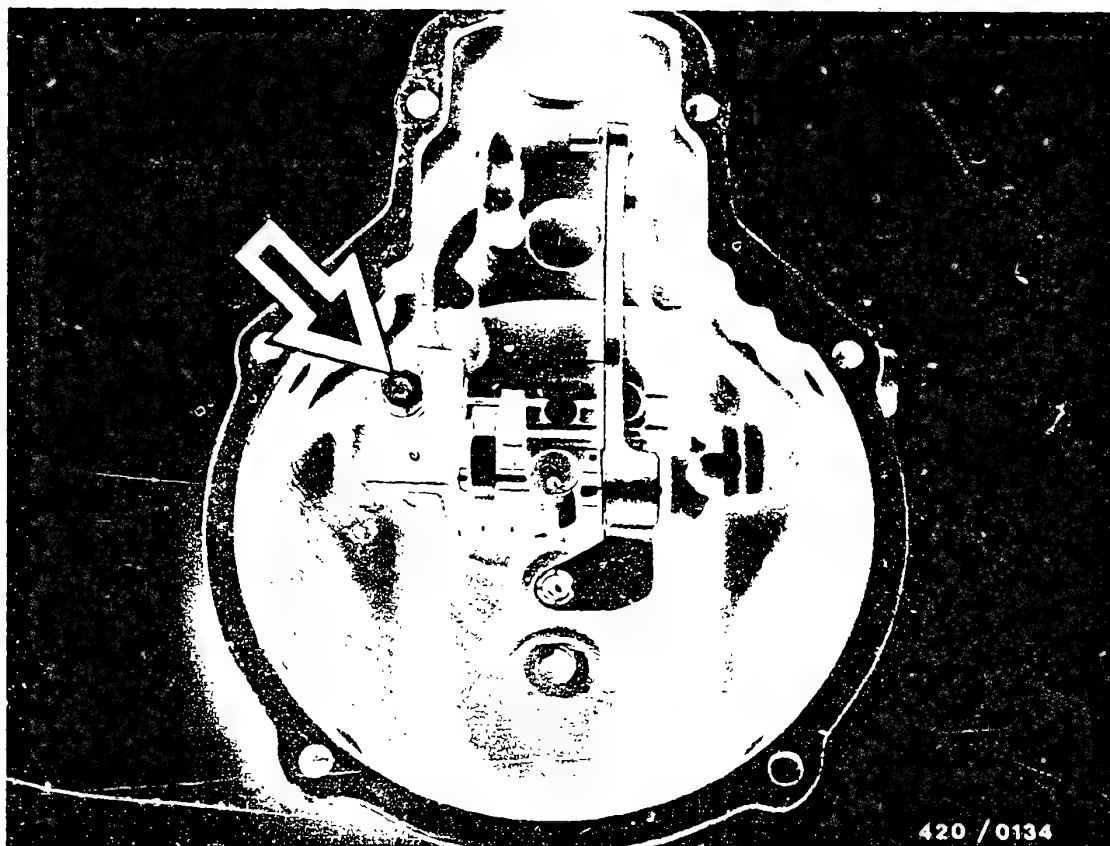
For better guiding of slider, hook in fulcrum lever and fix with link fork.

**H8**

Assembling the governor  
RQV governors







Tightening torques (continued)

Arrow = Hexagon screw

6...8 Nm

**A9**

Test specifications

RQ/RQV governors



Mount bearing pin and coupling pin.

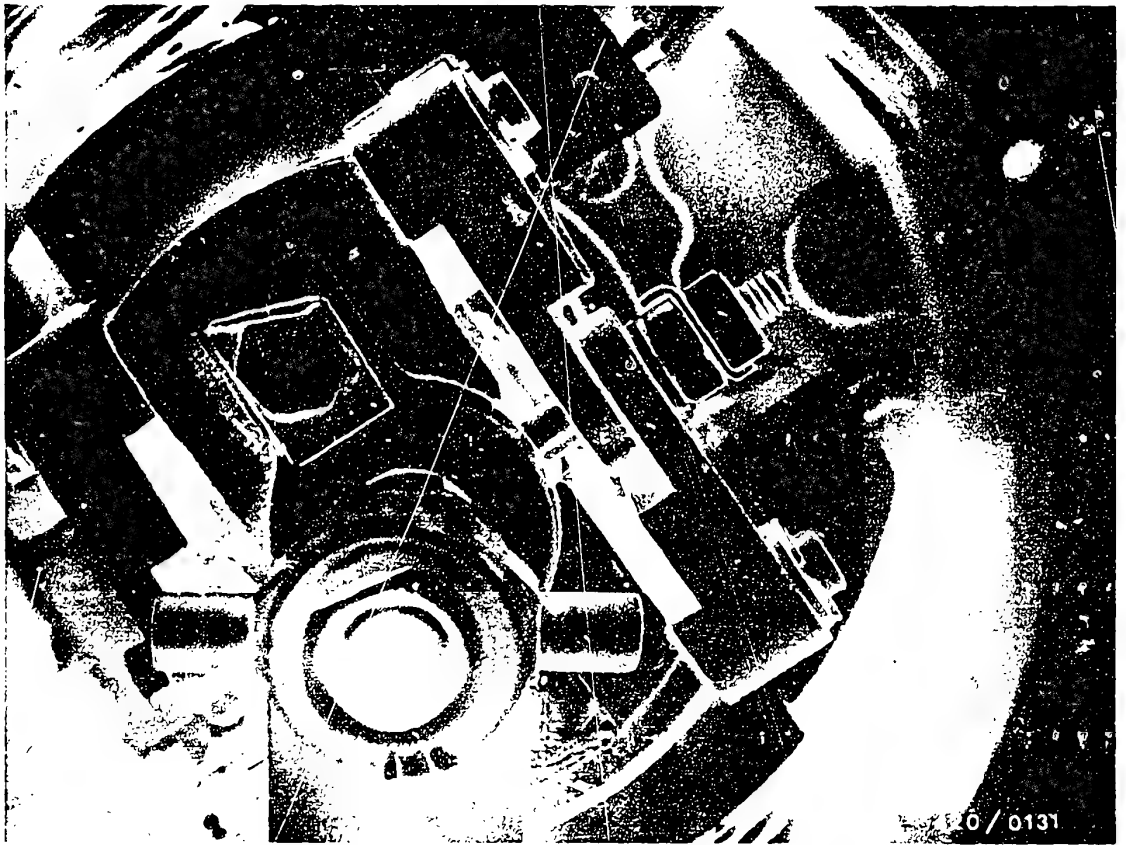
Check adjustment. If necessary, repeat adjustment

**H9**

Assembling the governor

RQV governors





In this sequence, put on screw plain washer, hexagon nut, lock washer and lock nut onto coupling pin.

Adjust longitudinal play of coupling pin to 0.5...1.0 mm (while pressing outer bell cranks outward).

Tighten hexagon nuts against each other to 6...8 Nm.

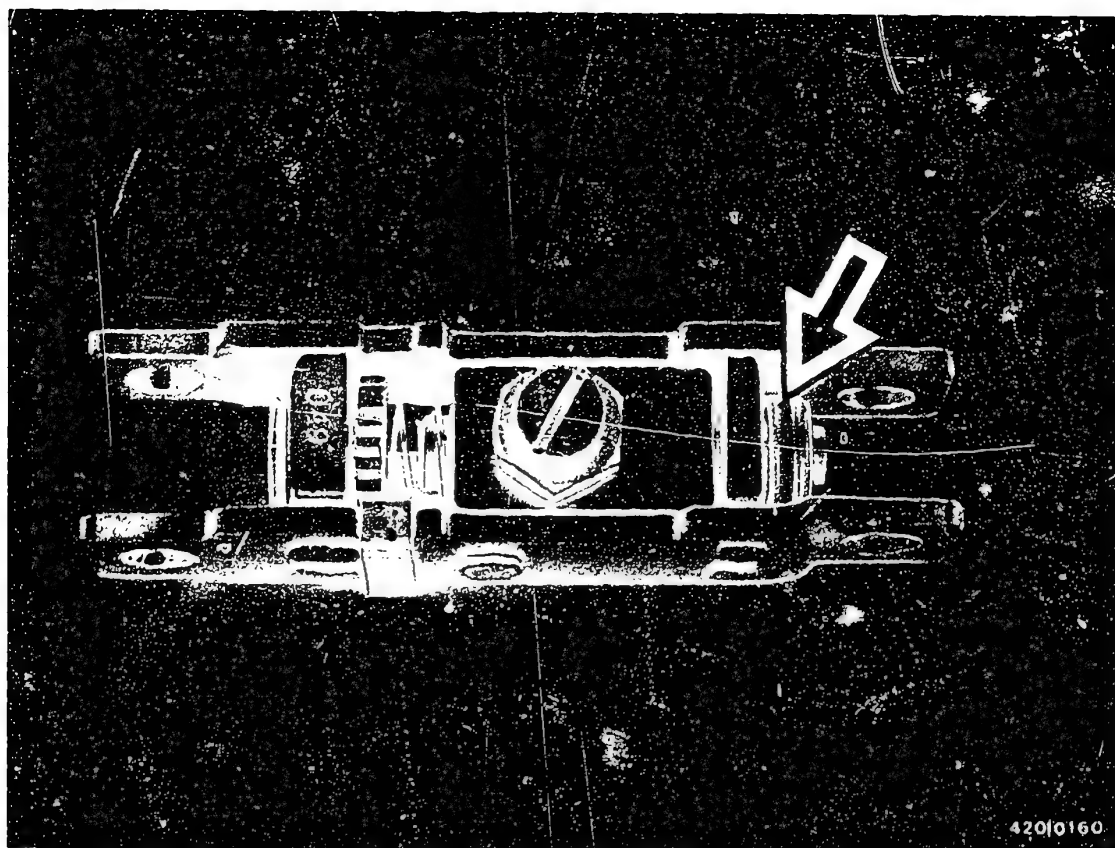
Bend lock washer over both hexagon nuts.

**H10**

Assembling the governor

RQV governors





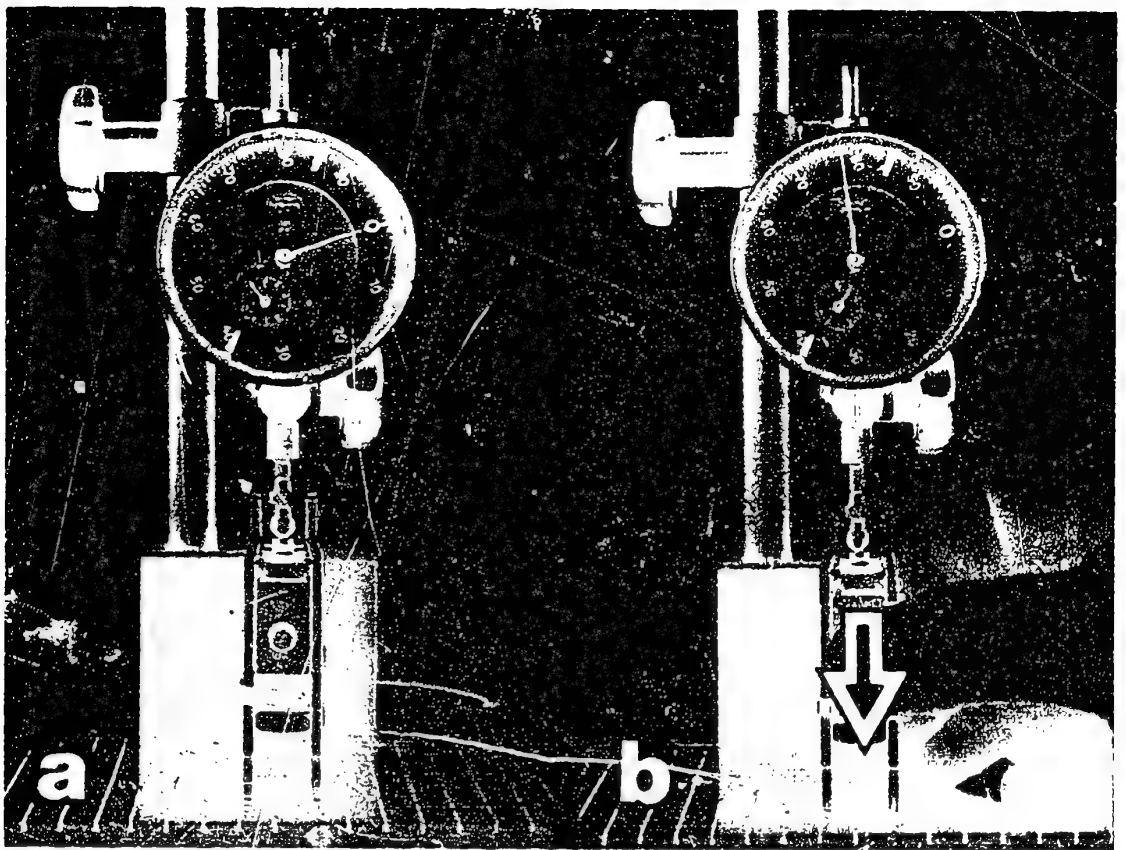
Adjusting the internal torque control (new version)

The torque-control travel is adjusted by shims (arrow).  
See the respective test-specification sheet for the  
torque-control travel (dimension "a").

**H11**

Assembling the governor  
RQV governors





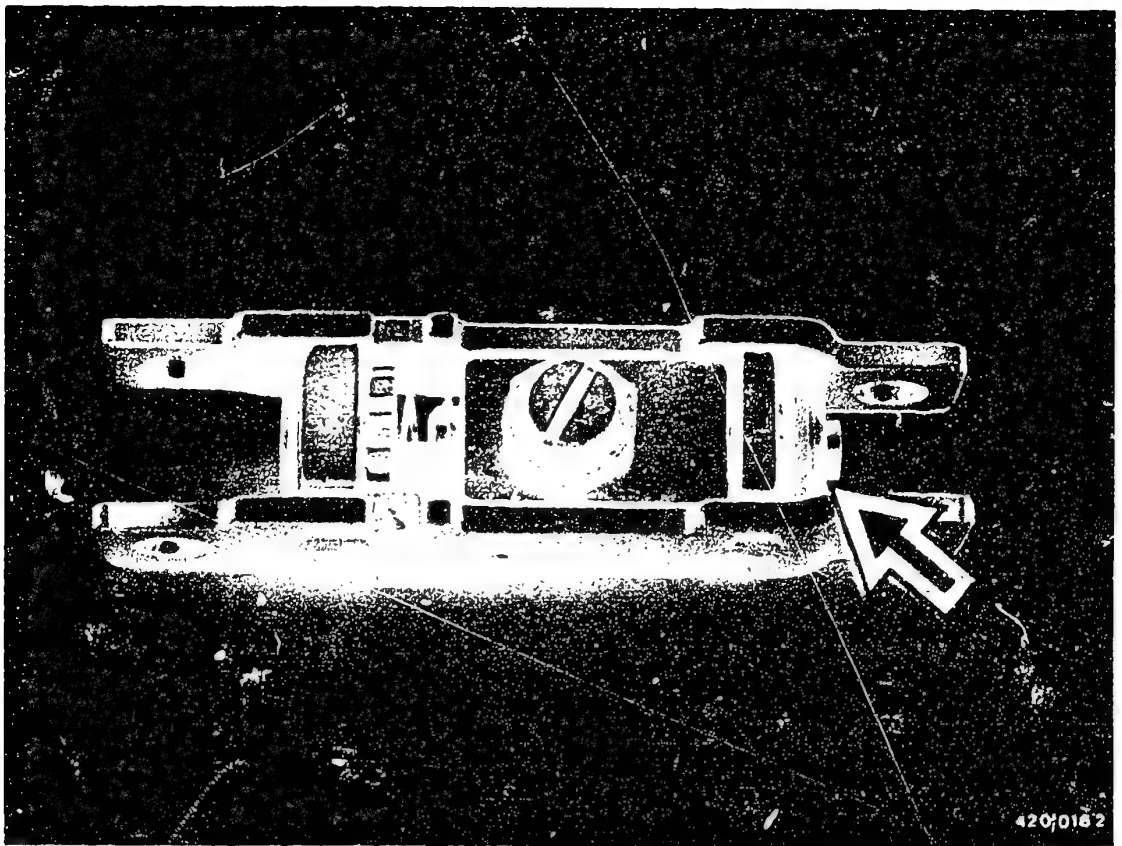
Place torque-control strap vertical on surface plate.  
Insert dial indicator in holder and place on pin of  
torque-control strap.

Preload dial indicator by approx. 2 mm and set to "0"  
(picture a).

Press sliding piece down as far as it will go (picture  
b).

Read off torque-control travel on dial indicator and  
compare with test-specification sheet.





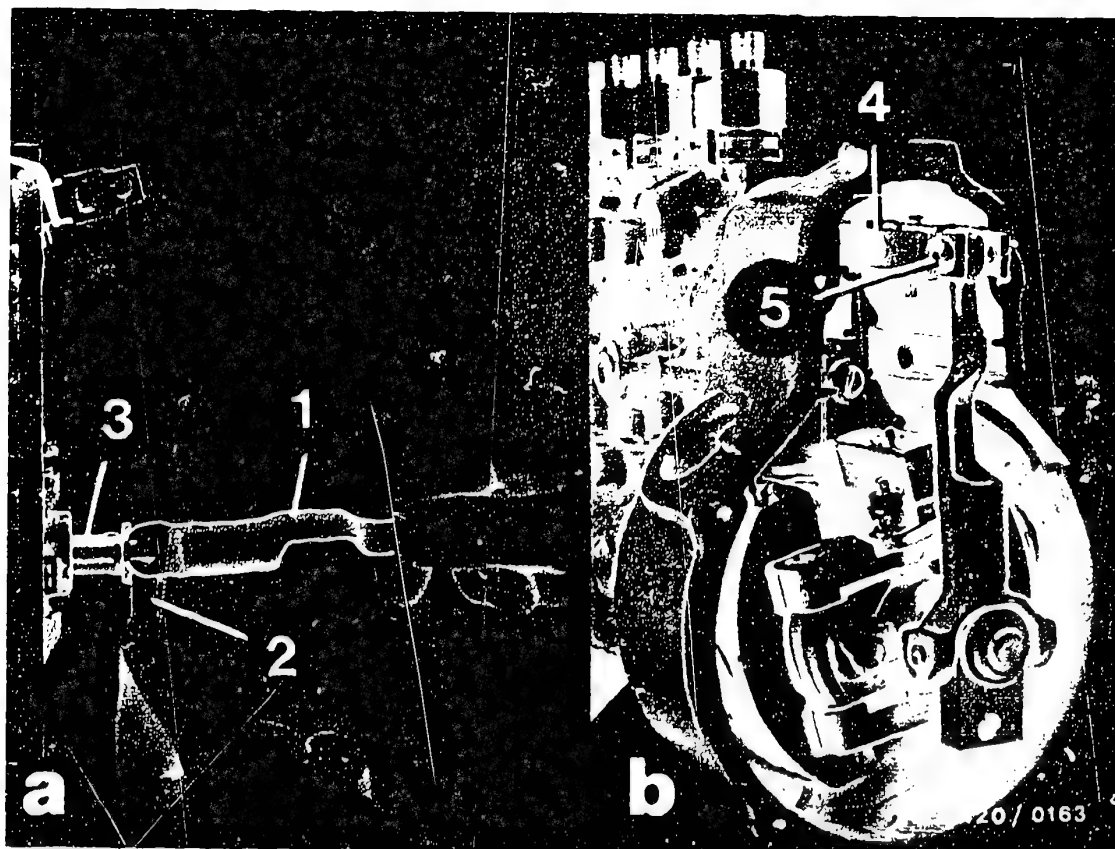
If the measured torque-control travel does not agree with the test-specification sheet, remove retainer (arrow) and adjust torque-control travel by changing the shims.

Then repeat measurement.

**H13**

Assembling the governor  
RQV governors





1 = Fulcrum lever  
 2 = Slider  
 3 = Bearing pin

4 = Link fork  
 5 = Retaining pin

Insert slider into bearing pin guide.

Hook fulcrum lever (picture a-1) into slider.

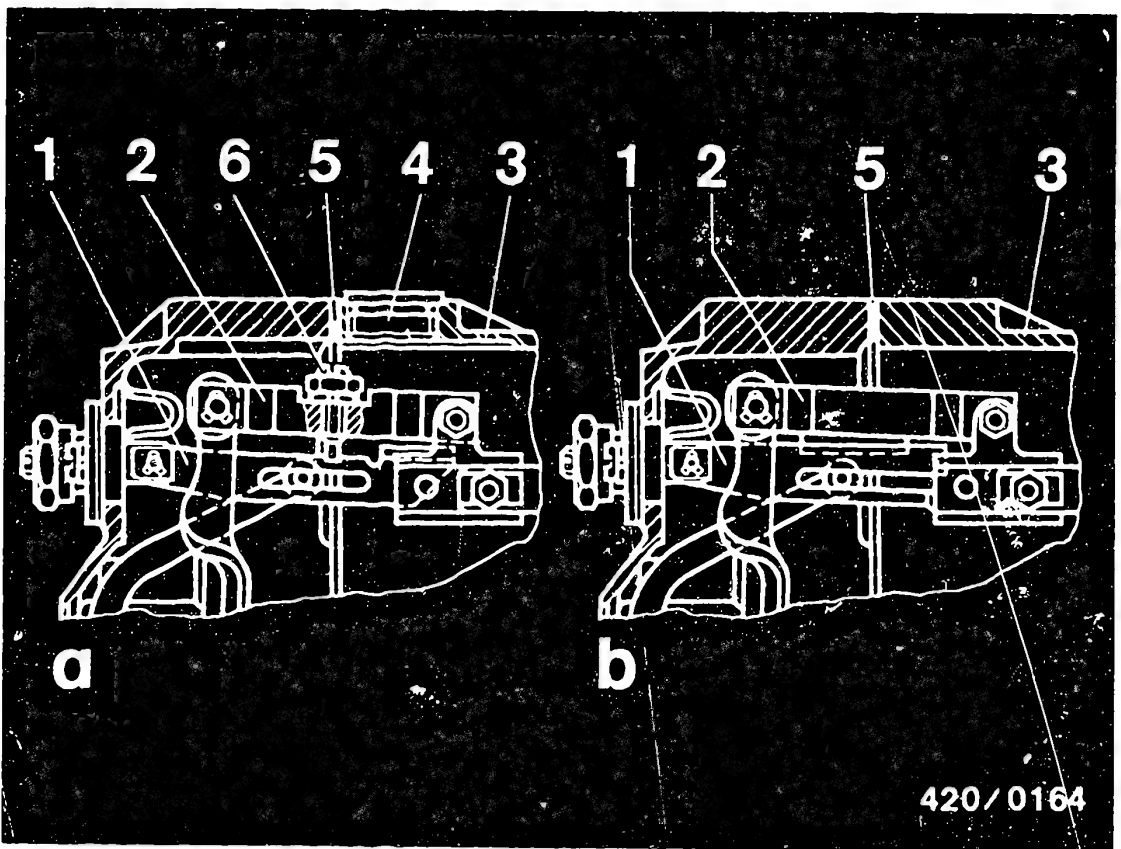
Place fulcrum lever vertically and insert retaining pin into link fork and fulcrum lever (picture b) (see note on next page).

Secure retaining pin with split pin or clamp.

Note:

Install fulcrum lever as shown in picture b (open side toward the front).





420/0164

a = New version

b = Old version

1 = Stop strap

4 = Screw plug

2 = Link fork

5 = Seal

3 = Housing

6 = Adjusting screw

Adjustable link forks and the corresponding stop straps (picture a) must not be installed in old governor housings and covers (picture b).

Conversely, old link forks and stop straps may be used in new governor housing and covers.

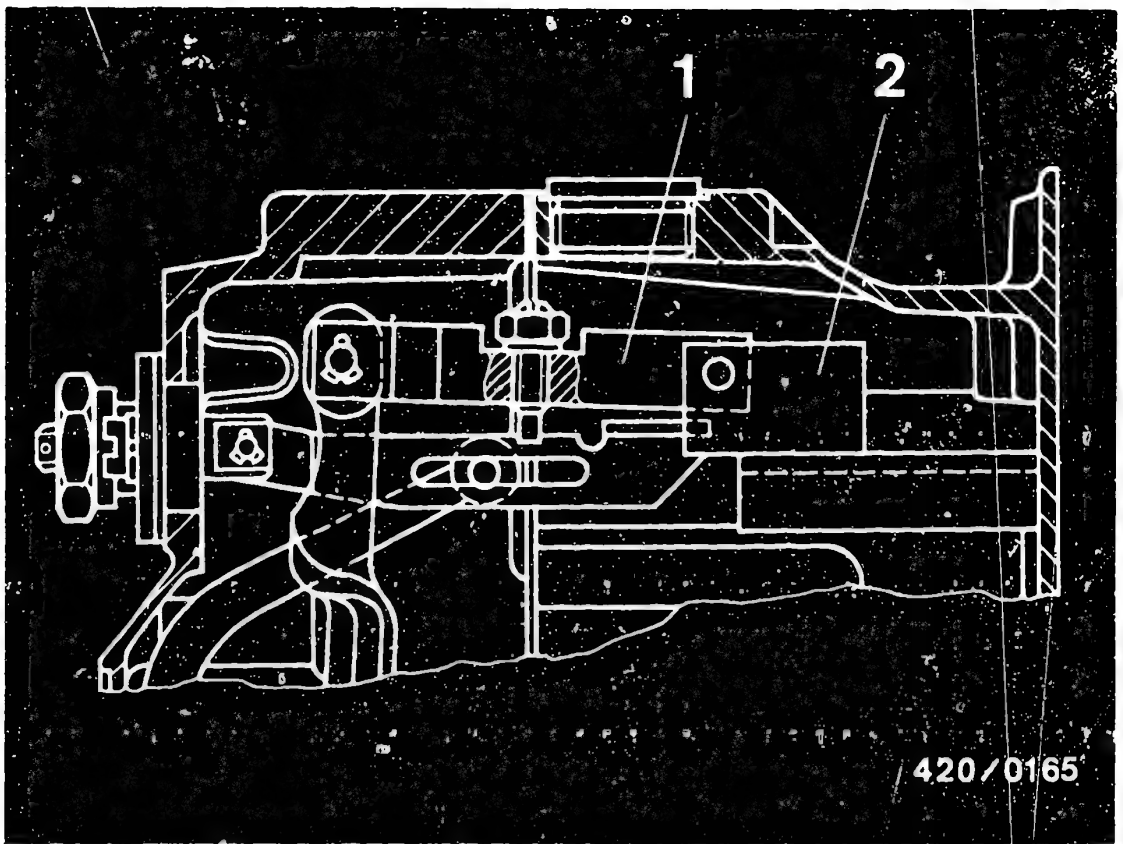
**H15**

Assembling the governor

RQV governors







1 = Link fork

2 = Strap

In governors of size "P" the strap screwed onto the control rod has been changed. The new strap (picture) may only be used together with the adjustable link fork.

Note:

Governors with adjustable link fork can be identified externally by the screw plug at the top on the governor housing and internally by recesses on cover and housing.

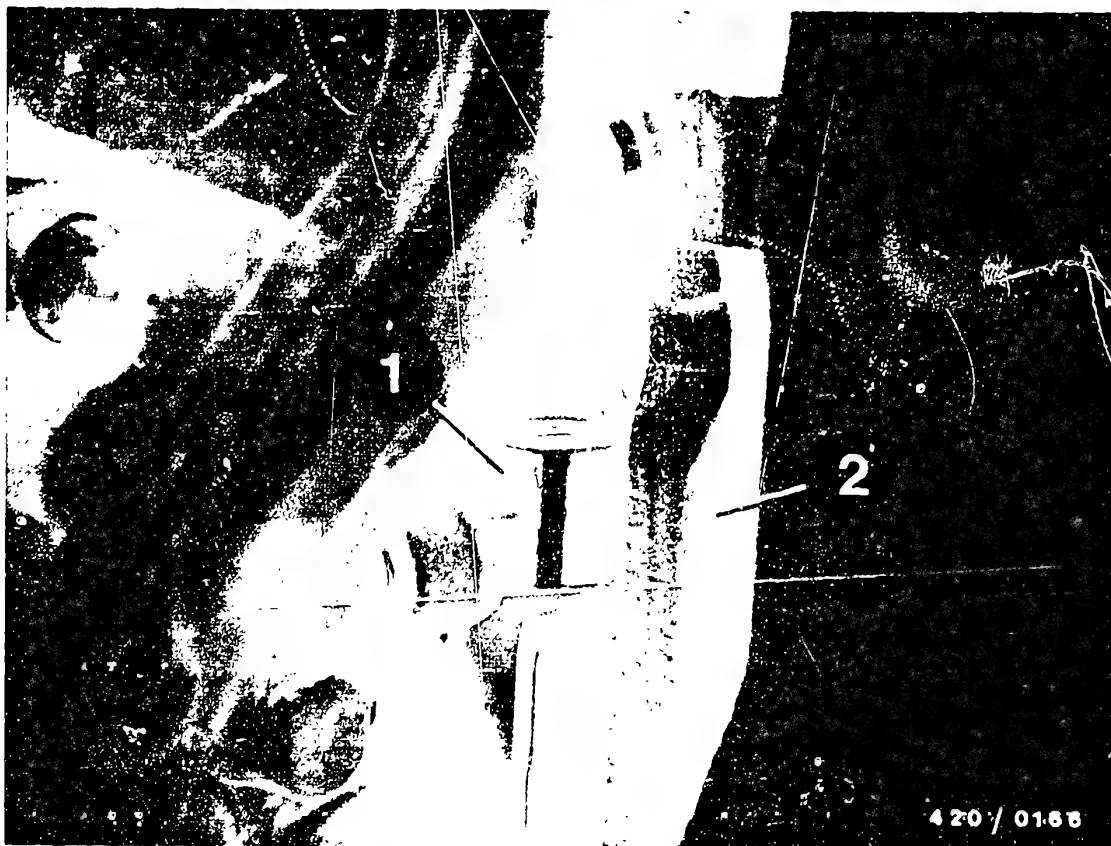
Do not use old version of cover seal for new governor housings.

**H 16**

Assembling the governor

RQV governors





1 = Guide block

2 = Fulcrum lever

Mount governor cover. To do this, position control lever vertically and insert guide block from above into fulcrum lever.

Note:

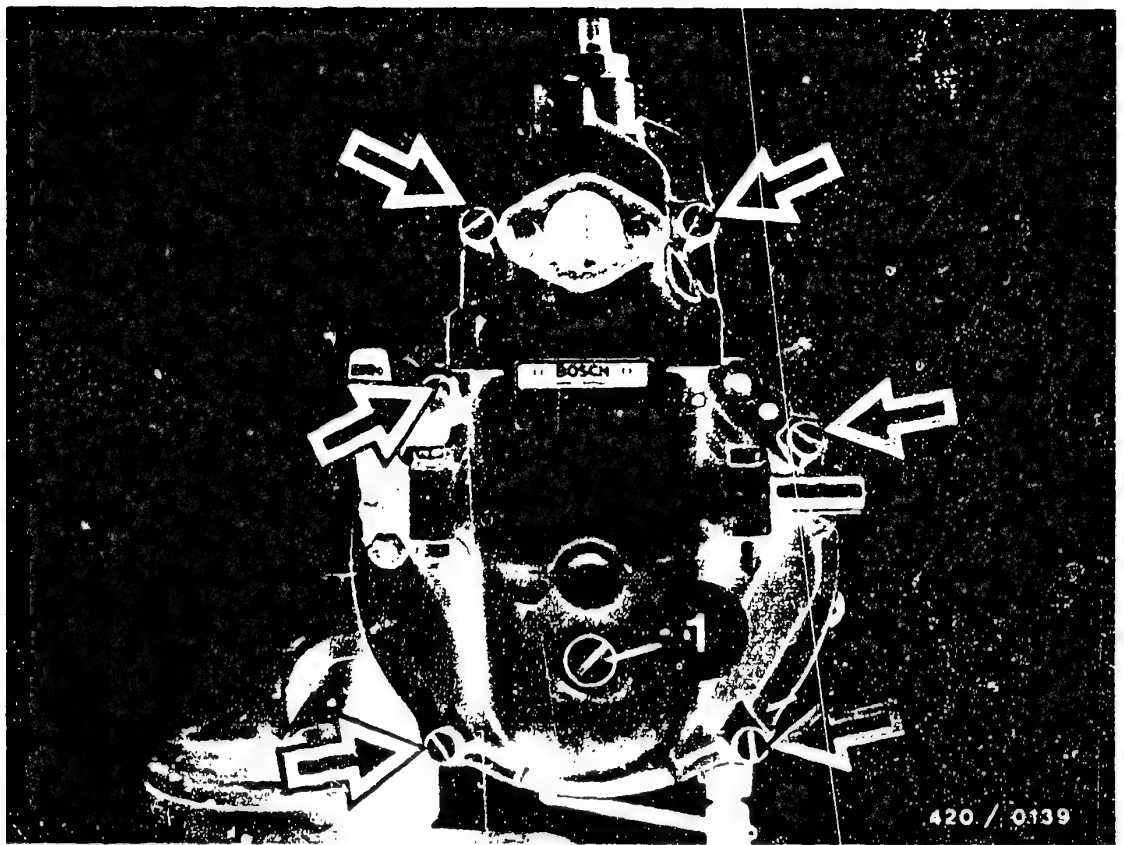
Use new seal between governor cover and governor housing.

**H17**

Assembling the governor

RQV governors





Tighten fastening screws (arrows) to 6...8 Nm (flat-head screw), 7...9 Nm (fillister-head screw).

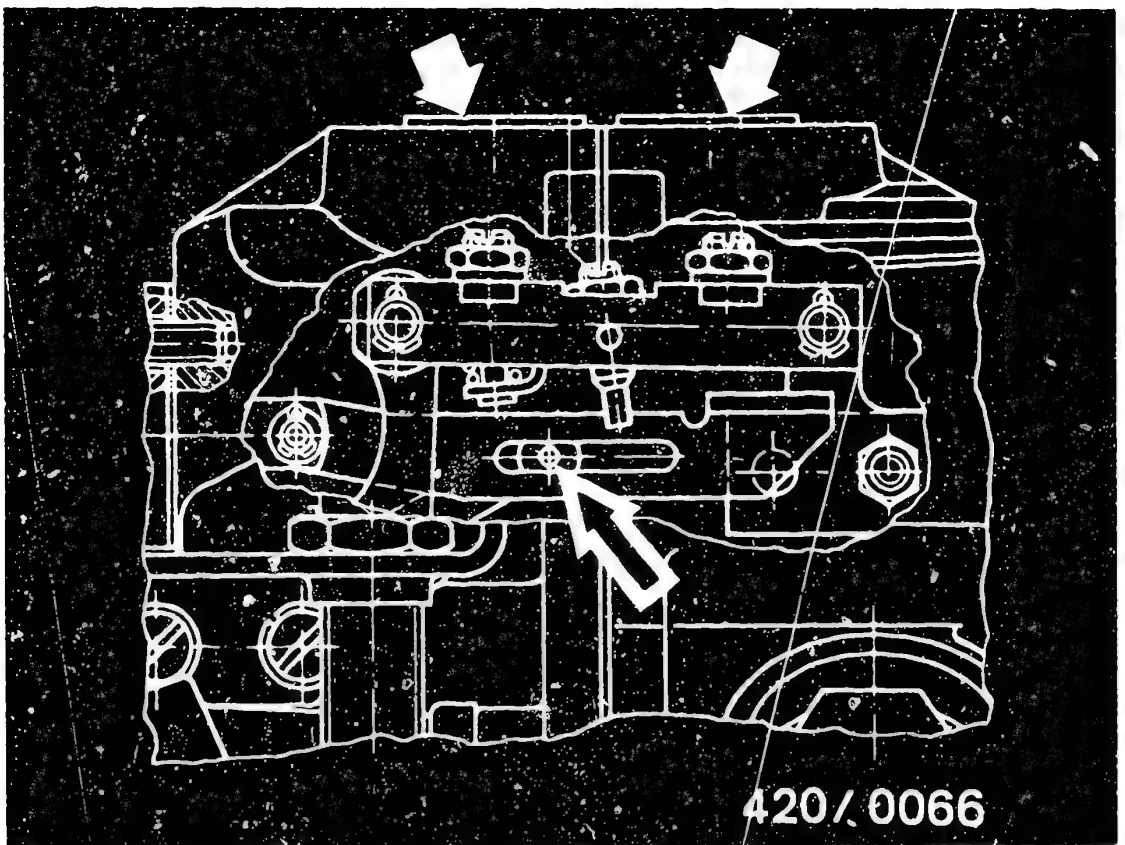
Screw in guide pin (1) with Loctite and tighten to 20...25 Nm.

**H18**

Assembling the governor

RQV governors





420/0066

### Mounting the manifold-pressure compensator

Unscrew screw plugs on governor cover/housing (upper arrows).

Control lever at fuel shutoff.

Introduce manifold-pressure compensator into governor cover with strap turned through 90° to the left.

Go round fulcrum lever and hook into guide pin of rocker rocker arm (arrow).

The correct positioning of the strap can be checked through the upper adjustment openings and through the spring chamber closing bore.

Tighten fastening screws to 5...7 Nm.

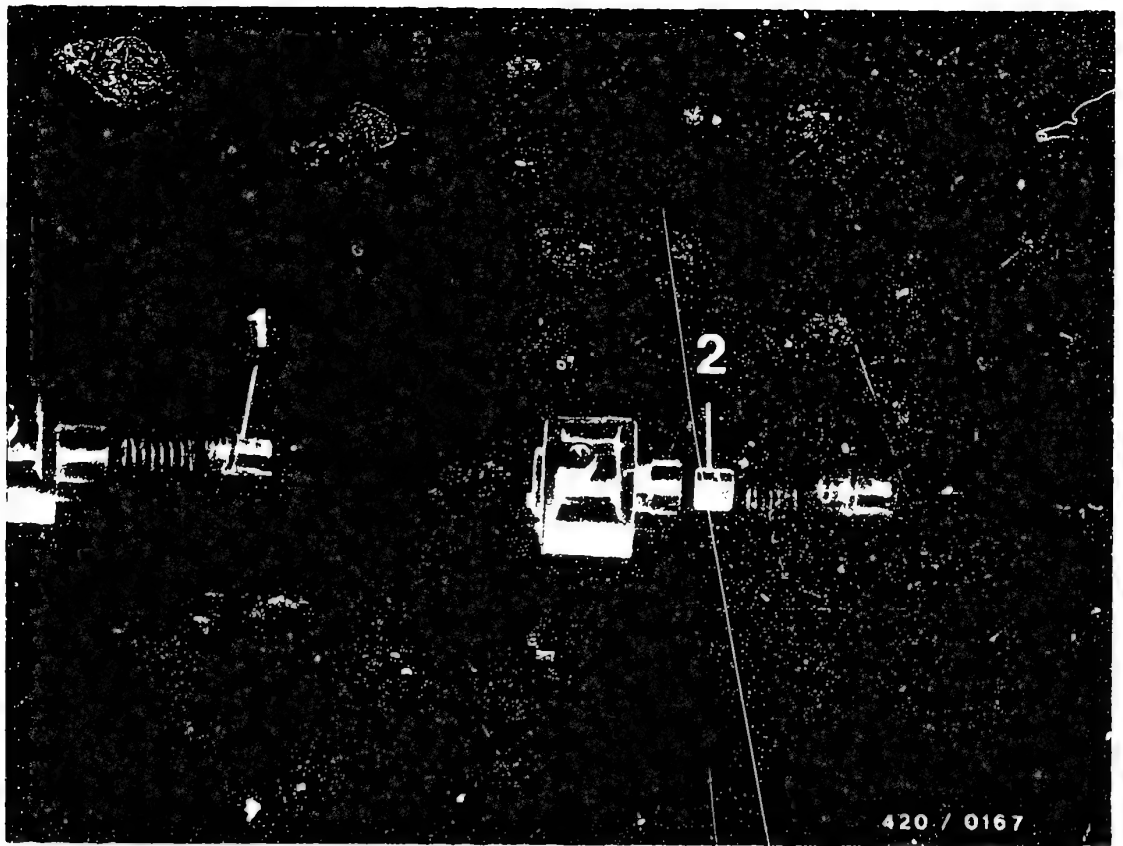
Tighten upper screw plugs to 10...15 Nm.

**H19**

Assembling the governor

RQV governors





### Adjusting the external torque control

In versions of governor with external torque control, various methods are used for adjusting the torque-control travel.

It is therefore necessary to adjust the torque-control travel using components from the appropriate service-parts list.

The torque-control travel is adjusted by:

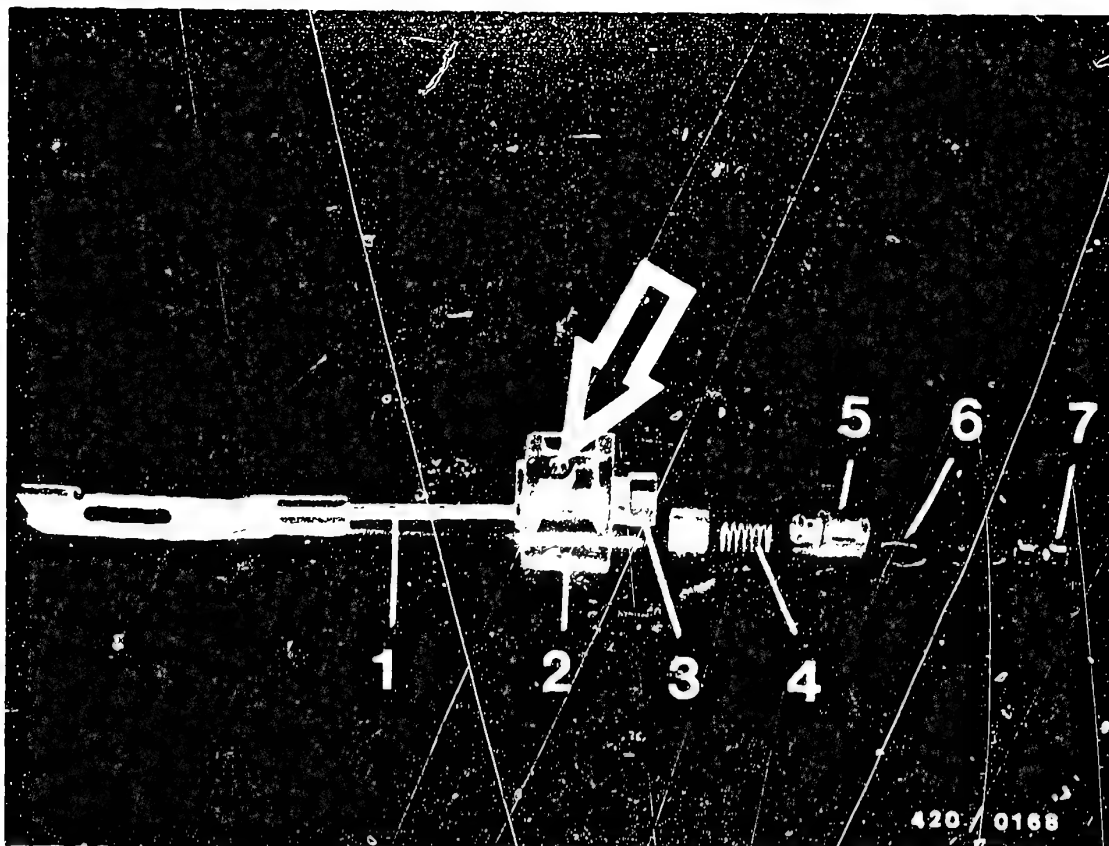
- guide bushing with different collar thickness (1)
- threaded sleeve (2).

See the respective test-specification sheet for the torque-control travel (dimension "a").

**H20**

Assembling the governor  
RQV governors





- |                           |                   |
|---------------------------|-------------------|
| 1 = Stop pin              | 5 = Guide bushing |
| 2 = Stop housing          | 6 = Retainer      |
| 3 = Guide sleeve          | 7 = Hexagon nuts  |
| 4 = Torque-control spring |                   |

To adjust the torque-control travel, unscrew hexagon nuts and pull stop pin out of stop housing.

Note:

Check center position of guide sleeve.

The guide pin must be in the center of the adjusting groove.

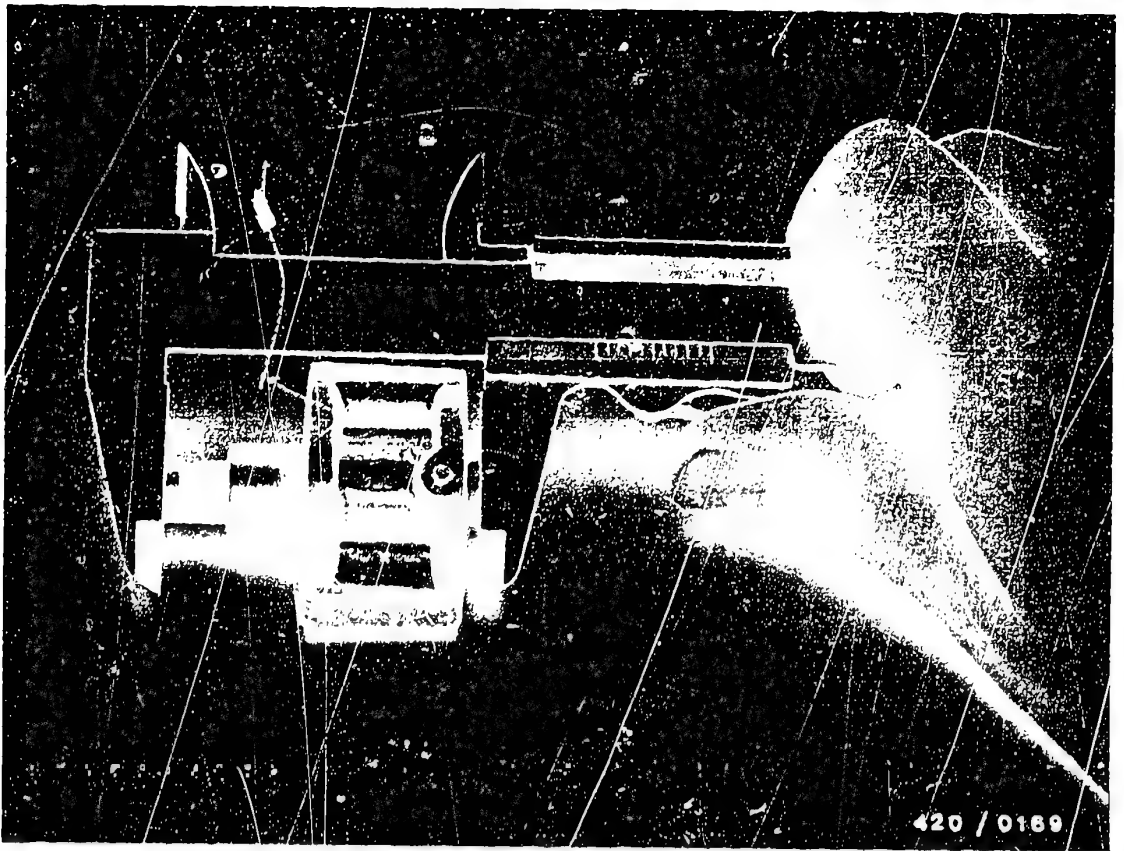
If not, unscrew headless setscrew (arrow). Turn guide sleeve and screw in setscrew in the middle of three counterbores.

**H21**

Assembling the governor

RQV governors





Using caliper gauge, measure distance between housing collar and guide bushing (picture).

Against the force of the torque-control spring, press guide bushing into stop housing and measure distance again.

The difference between both measurements is the torque-control travel.

If the torque-control travel does not agree with the test-specification sheet, adjust the torque-control travel in the appropriate manner.

Repeat measurement.

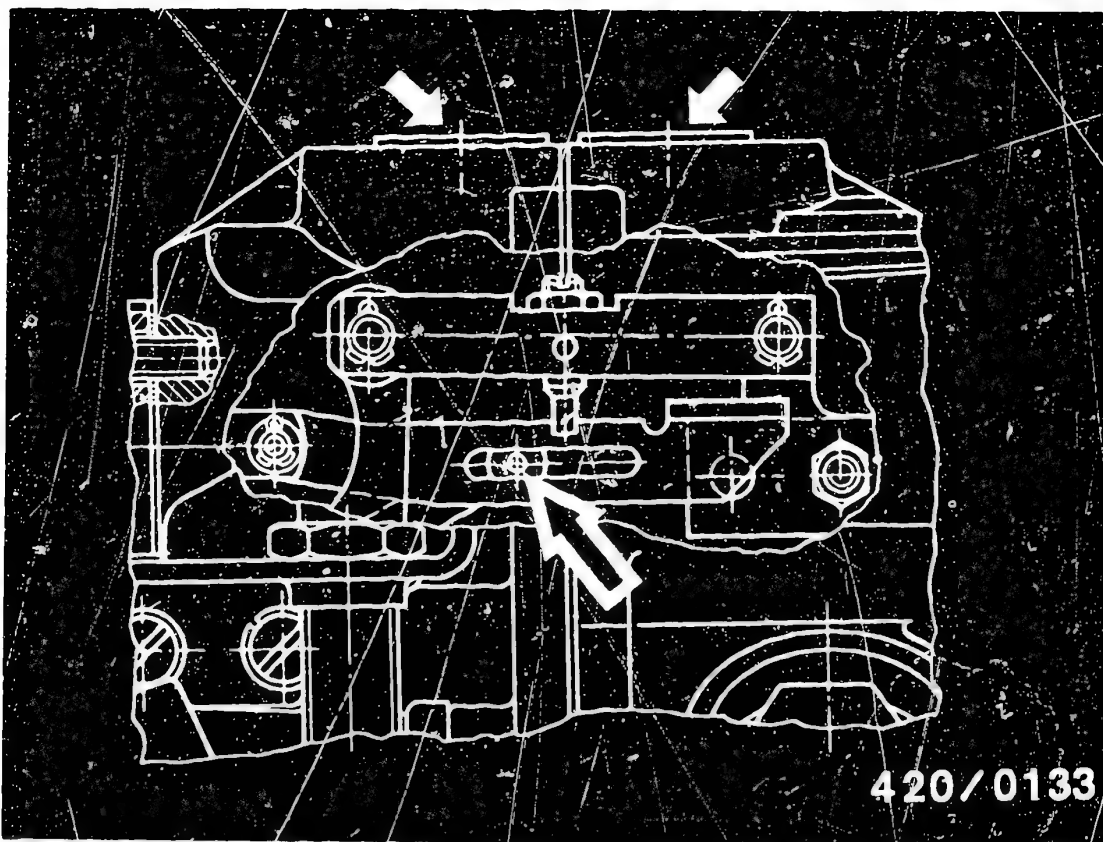
Finish off assembling the torque control.

**H22**

Assembling the governor

RQV governors





### Mounting the full-load control-rod stop

Unscrew screw plugs on governor cover/housing (upper arrows).

Control lever at fuel shutoff.

Introduce stop into governor cover with strap turned through 90° to the left.

Go round fulcrum lever and hook into guide pin of rocker rocker arm (arrow).

The correct positioning of the strap can be checked through the upper adjustment openings and through the spring chamber closing bore.

Tighten upper screw plugs to 10...15 Nm.

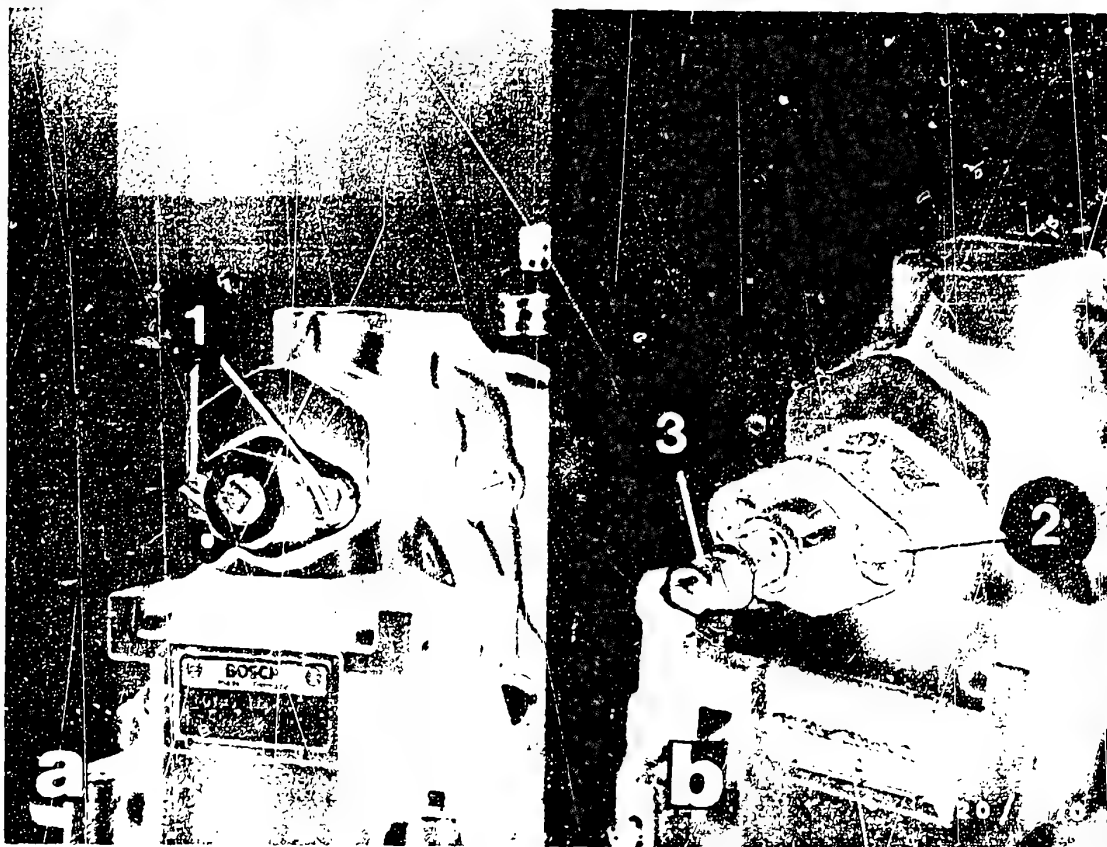
**H23**

Assembling the governor

RQV governor







Picture a = Full-load control-rod stop without torque control

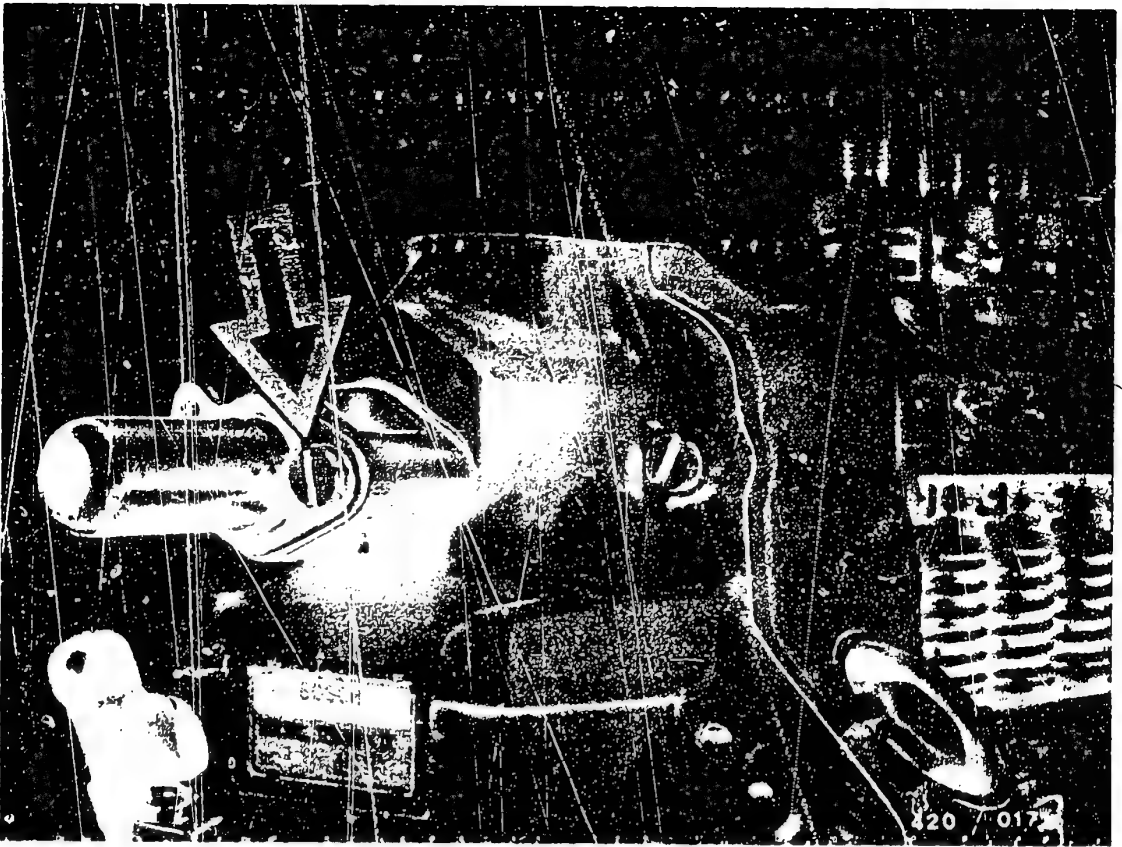
Picture b = Full-load control-rod stop with torque control

1 = Hexagon screw	5...7 Nm
Fillister-head screw	4...6 Nm
Capstan screw	4...6 Nm
Break-off screw	2...3 Nm
2 = Threaded sleeves	4...6 Nm
3 = Hexagon nut	3...4 Nm

To fasten the full-load control-rod stop, screw threaded sleeves or screws into governor cover and tighten to appropriate torque depending on method of mounting.

For stop with torque control (picture b), screw hexagon nuts onto threaded pin and tighten against each other.





Put on protective cap and tighten fastening screws  
(arrow) according to type of screw:

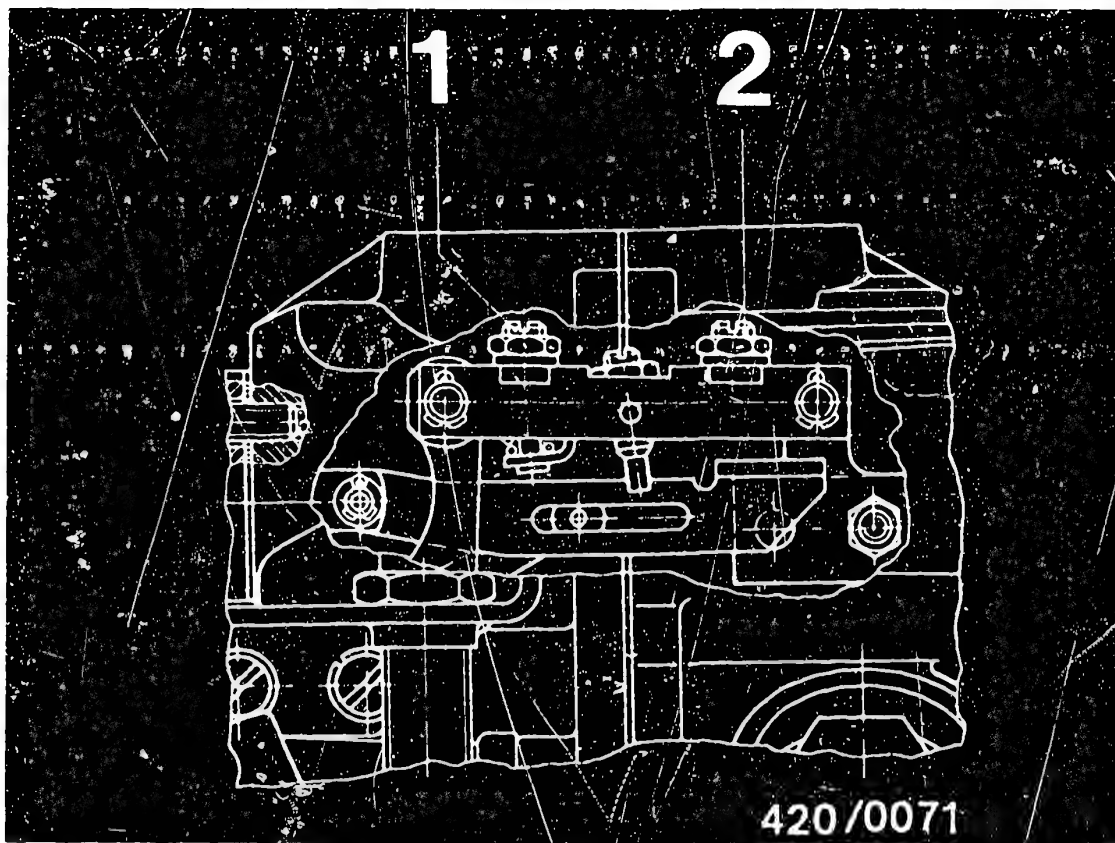
Fillister-head screw	4...6 Nm
Capstan screw	4...6 Nm
Break-off screw	2...3 Nm

**J1**

Assembling the governor

RQV governors





Basic adjustment of internal torque control (older version)

- 1 = Torque-control spring adjusting screw
- 2 = Torque-control travel adjusting screw

If there is a torque control, unscrew screw plugs on governor cover/housing.

If a torque-control travel (dimension "a") is given in the test-specification sheet, preload the torque-control spring.

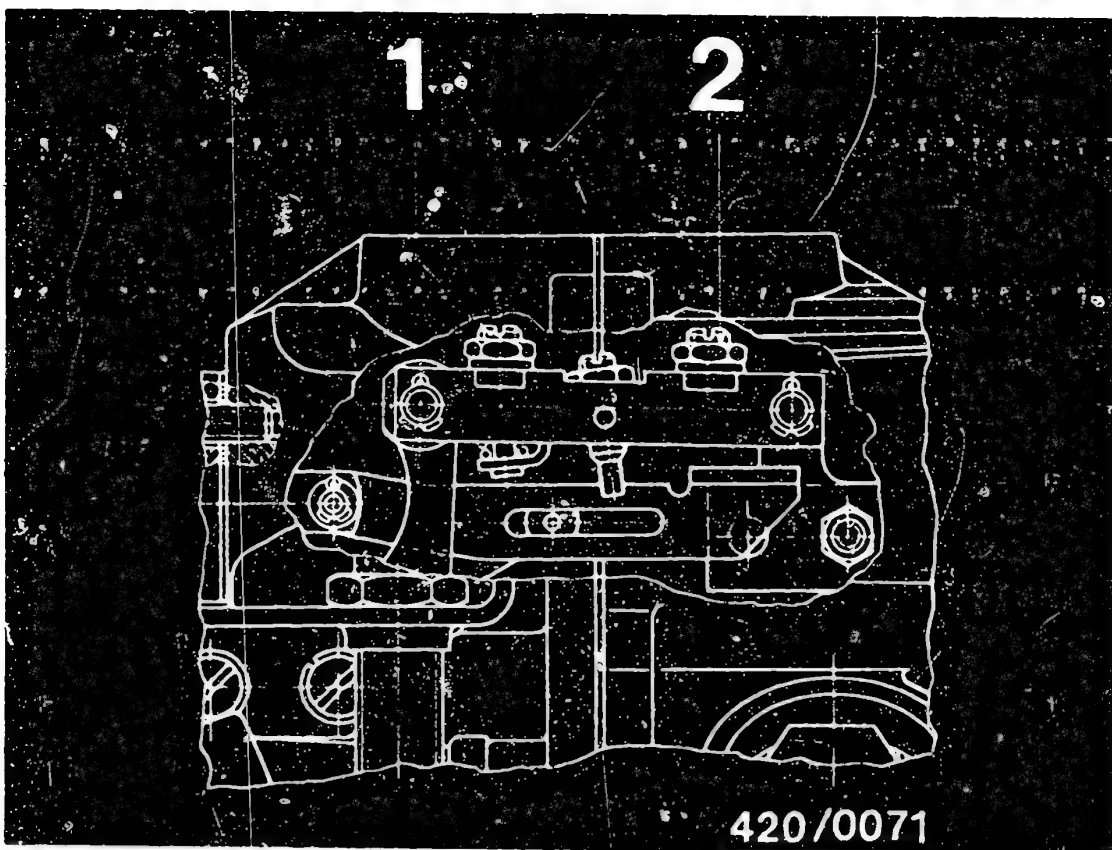
To do this, adjust torque-control spring adjusting screw (1) flush with lock nut and lock.

**J2**

Assembling the governor

RQV governors





- 1 = Torque-control spring adjusting screw  
2 = Torque-control travel adjusting screw

If dimension "a" is given as 0 mm in test-specification sheet, then in spite of a torque control being installed, set torque-control travel 0.

To do this, screw torque-control travel adjusting screw (2) upward as far as it will go and lock with lock nut.

Tighten screw plugs to 10...15 Nm.

**J3**

Assembling the governor

RQV governors



Leak test on camshaft chamber, spring chamber and governor chamber

Finish off assembly of injection pump.

Compressed air is required for the leak test. Introduce into camshaft chamber of pump at suitable point (e.g. oil inspection bore).

Immerse injection pump vertically into test bath.

Test duration and test pressure:

A and MW pumps:	3 min. at 1.5 bar, then 1 min. at 0.5 bar
P pumps:	7 min. at 1.5 bar, then 1 min. at 0.5 bar

Then visually examine whether there are any leaks at joints, screw connections, seal rings and end covers on housing and cover.

No air bubbles may be visible.

To prevent possible skin rashes, grease hands beforehand with protective skin cream and wash with soap and water after test is completed.



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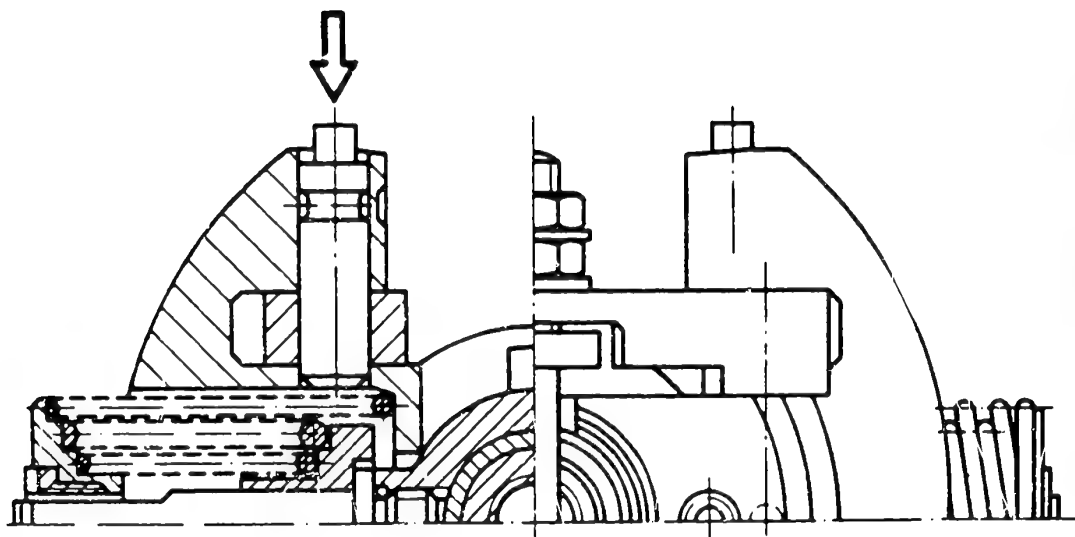
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40...46, 58

LOOSE RETAINING PINS IN RQ/RQV GOVERNORS  
FUEL-INJECTION PUMPS PE (S) ...P...S 3000

VDT-I-420/116 En

6.1984



As of FD 347 the calking of the retaining pins in the flyweight assemblies of RQ and RQV governors has been changed. To obtain comprehensive information on the effectiveness of this change, the security of the retaining pin must be tested when servicing all PE(S).. P..S 3000 injection pumps - including those with FD before 347.

**N1**

Technical Bulletin

RQ/RQV governors



Conduct the test as follows.

- Unscrew lateral screw plug on governor housing.
- Using flat-nose pliers, grip retaining pin and check whether it can be moved in the axial direction (see picture).
- In the case of loose retaining pins, the flyweight assembly must be renewed.

During the warranty period the renewal of the flyweight assembly is to be performed free of charge. After the warranty period a goodwill application may be made.

#### Warranty procedure

During the warranty period RG/AV should send defective flyweight assemblies for warranty assessment with warranty and goodwill application - outside Germany - G21 and delivery note to:

Robert Bosch GmbH  
KH/LAV2 - Auspackraum  
zur Weiterleitung an K5/QSG  
Auf der Breit 4  
D 7500 Karlsruhe 41.

Published by:

Robert Bosch GmbH  
Division KH

Technical After-Sales Service (KH/VKD2)

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Technical Bulletin  
RQ/RQV governors



# After-sales Service

## Technical Bulletin

Only for use within the Bosch organization. Not to be communicated to any third party.

RQ, RQV... P-GOVERNOR

VDT-I-420/110 En

Modification to the control-rod compression spring

8.1981

It can occur on the RQ..P and RQV..P governors, that the turns of the compression spring (Microfiche Item 96) ride up over one another and cause the control rod to jam.

As from FD 145, the compression spring item 96 was increased in diameter as a remedial measure. As a result, the spring seat item 95 on the governor, and the thread ring item 34 on the fuel-injection pump must be changed as well.

When carrying out repairs, care must be taken that all three items are replaced.

Under item 96, three different compression springs are offered for the various governors. Details can be seen from the microfiche.

Designation	Microfiche pos'n	Old part number	New part number
<u>Governor:</u>			
Spring seat	95	2 420 500 000	2 420 500 042
Compression spring	96	2 424 615 015	1 424 615 023
Compression spring	96	2 424 615 007	2 424 615 024
Compression spring	96	1 424 615 037	2 424 615 025
<u>Fuel-injection pump:</u>			
Thread ring	34	1 413 344 000	2 413 344 001

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Technical Bulletin

RQ/RQV governors





# After-sales Service

## Technical Bulletin

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CLAMPING FIXTURE KDEP 2894

42

Modification of the clamping nut

VDT-I-420/1000 En

1.1979

Clamping device (Fig. 1) for the fitting and removal of the governor springs on RQ- and RQV-governors.

In order to increase the seating area for the governor spring, the outside diameter of the spring plates 1 420 520 002 and .. 003 for the RQV governor has been changed.

This necessitates enlarging the bore of the clamping device KDEP 2894.

The outer clamping nut must be modified in accordance with Fig. 2.

With new deliveries, this modification has already been carried out at the works.

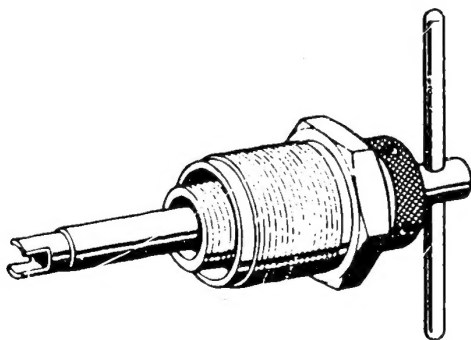


Fig. 1

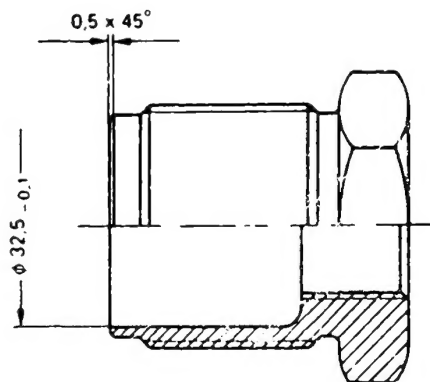


Fig. 2  
Ø = dia.

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Impressum

RQ/RQV governors

